

# PBY CATALINA

in action



Aircraft Number 62

squadron/signal publications

Don Green 83







# INTRODUCTION

No design can challenge the PBY Catalina for being the most successful flying boat ever produced. In production continuously for over ten years, it was built in larger numbers than any other flying boat, in fact, it was built in larger numbers than all other flying boats combined. Ironically, the PBY would probably never have been produced had Consolidated not underbid Douglas in mid-1935, when the Navy requested bids from the industry for a production batch of patrol planes based on the Consolidated XP3Y-1 and the Douglas XP3D-1 prototypes. The competing designs had both completed successful flight test programs and had met all specified performance requirements with no significant problems. With near-identical performance, the choice between the two aircraft came down to price — and Consolidated's bid of \$90,000 per plane, being substantially lower than the Douglas bid of \$110,000, won the contract.

The PBY was named "Catalina" by the British in November 1940, shortly after delivery of the first of many PBYs that would eventually serve with the RAF. The Catalina was named for the resort island off the California coast, satisfying the RAF requirement that aircraft names be representative of the manufacturer. When the United States officially decreed names for aircraft in 1941, many British designations for airplanes common to the two nations, including Catalina for the PBY, were adopted. The Canadians identified the RCAF version of the PBY flying boat as "Canso" and the amphibian as "Canso A". Still another, not widely known name for a PBY variant, was "Nomad", the name selected for the PBN-1, a major redesign of the PBY-5 undertaken and produced by the Naval Aircraft Factory at Philadelphia in 1944-45.

Written-off as obsolescent by the U.S. Navy in 1939 when the last of the PBY-4 had been delivered, and with prototypes of proposed replacements already flying (twin engine XPBM Mariner, and the 4-engined XPB2Y Coronado and XPBS), the PBY continued in production only because Consolidated received substantial foreign orders for the Model 28-5 (export version of the PBY-5), from Britain, Canada, Australia, France and the Netherlands. The PBY was the only available maritime patrol plane that could satisfy the urgent need of the Allies as they belatedly prepared for war. Then in December 1939 the U.S. Navy contracted for 200 PBY-5 models, the largest single order for naval aircraft since World War I. These contracts provided the first of the aircraft which would earn the Catalina the reputation as the sea-going workhorse of World War II naval aviation.

Of the some 3,300 Catalina boats and amphibians produced, nearly a hundred are still flying today. And the PBY continues to demonstrate the versatility and dependability which originally earned the "P-boat" her reputation as a go-anywhere, do-anything workhorse. In spite of being a 47 year old design, there is no airplane available anywhere better suited for the tasks the PBY takes in stride. The old Cat fights forest fires as water bombers, flies geological surveys with magnetometers, transports personnel, supplies and heavy equipment to otherwise inaccessible areas, and, with new luxuriously outfitted interiors, flies sportsmen into virgin wilderness areas for hunting and fishing.

## Early Consolidated Flying Boats

The PBY design evolved at Consolidated under the guidance of brilliant aero-engineer Isaac Macklin "Mac" Laddon, who joined the company in 1927. Reuben Fleet, Consolidated's founder, was determined to extend the firm's business from the successful primary trainers (Army PT and Navy NY) then in production at the plant in Buffalo, to heavy multi-engine aircraft for which the Army had established new requirements. To enhance Consolidated's capabilities in this area, Fleet employed Laddon and teamed him with veteran multi-engine aircraft designer Igor Sikorsky in order to enter the 1927 competition for the design of a heavy bomber. Laddon had been Chief of the Army aircraft engineering section at Wright Field, responsible for multi-engine design, and, additionally as a private venture, had headed a team of engineers which designed a long-range flying boat under



The Navy's first monoplane patrol boat, the Consolidated XPY-1 Admiral, was a clean break with the line of biplane flying boats started in World War I. (Convair)

contract to the Boeing company.

The Consolidated-Sikorsky entry in the 1927 bomber competition was a twin-engine biplane based on an earlier design, the S-37, which Sikorsky had built for a Transatlantic flight attempt. Their joint design, named "Guardian", was out-classed by its competitor, the Curtiss B-2 "Condor", which won the production contract. Never-the-less, Laddon and his engineering team had gained valuable experience for Consolidated which would be well utilized in the immediate future.

## XPY-1 Admiral

First of the design series, which ultimately evolved into the Catalina, was Consolidated's XPY-1. This high-wing all-metal monoplane was an entirely new concept in long-range seaplane design and was a clean break with the line of biplane flying boats which had started with the Glenn Curtiss "America" in 1914. Developed by the Navy, the basic design was offered to the aviation industry for bids for the construction of a prototype. Consolidated was low bidder and on 28 February 1928 received a \$150,000 contract for the development and construction of the new flying boat. After almost a year of all-out effort, much of it involving the development of new techniques for the fabrication of the then revolutionary aluminum alloys, the XPY-1 "Admiral" was completed in December. A previously unthought of problem now confronted the builders — a completely ice clogged Niagara River — no place to test the new seaplane! Rather than wait for the Spring thaw, Consolidated, with Navy concurrence, opted to have the new boat disassembled and shipped by rail to NAS Anacostia, where flight tests could be conducted.

The XPY arrived at Anacostia during the Christmas holidays and reassembly, under Mac Laddon's supervision, was begun immediately. Following ground tests, a first flight was flown successfully on 10 January 1929, with Navy Lieutenant A. W. Gorton at the controls and Mac Laddon, as was his custom, riding the co-pilot's seat. At this point in its history, Consolidated had no seaplane pilot in its employ and was forced to borrow Lt. Gorton from the Navy for the flight.

Performance of the XPY during test flights met all requirements and in June 1929 the Navy offered the design to qualified bidders for a production batch of nine planes based on the Consolidated prototype. Consolidated's bid, which included substantial engineering costs incurred during the design development, was significantly higher than the bid submitted by the Glenn L. Martin Co., which was awarded the production contract.

Undaunted by this turn of events, Consolidated immediately initiated the development of a 28 passenger commercial flying boat based on the XPY design. This new seaplane, called "Commodore", was utilized by the New York, Rio, Buenos Aires Line (NYRBA) and its successor, Pan American Airways, in the first successful airline service to the Caribbean and South America. The Commodore continued in airline service for many years, establishing new standards for passenger comfort and reliable performance.

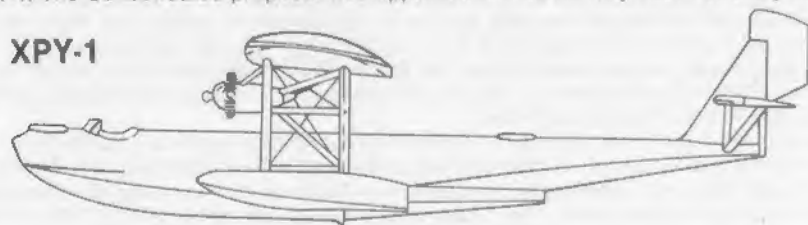


The lower wing, used in place of struts on the XP2Y-1, improved performance considerably, but the third engine proved more liability than asset and was soon removed. (USN via F.C. Dickey)

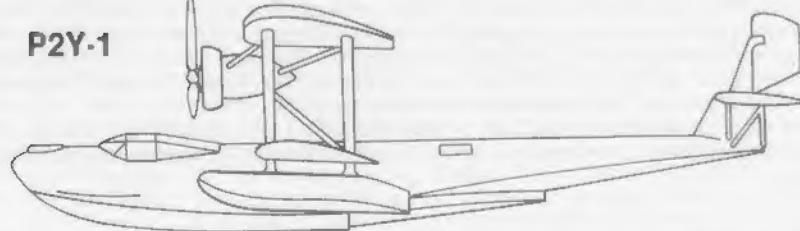
## The P2Y Models

Concurrently with production of the civil Commodore, Mac Laddon's design team undertook a major revision of the XPY to meet new Navy requirements. The result of their effort was the XP2Y-1, with a predicted range of 3,000 miles — almost double that of the XPY-1. The Consolidated proposal was approved and on 26 May 1931 the Navy awarded

XPY-1



P2Y-1



Consolidated a contract for detail design and construction of a single prototype. In a further effort to improve performance, provisions were made for a third engine mounted on struts above the wing center section, as had been specified for the XPY. The new P-boat was dimensionally similar to the earlier XPY but had an enclosed cockpit and a short lower wing which replaced the struts which had supported the stabilizing floats on the

earlier model. A pair of Wright Cyclone engines of 575 hp replaced the 450 hp Pratt & Whitney Wasps of the XPY. The XP2Y-1 first flew on 26 March 1932 in the three-engine configuration. The third engine was removed early in the flight test program after it was determined that it provided no significant improvement in performance over two engines. In an unprecedented demonstration of confidence in Consolidated, the Navy had awarded a production contract for 23 of the new boats under the designation P2Y-1, on 7 July 1931 — less than three months after the order for the prototype and more than nine months prior to the prototype's first flight!

The Navy's confidence in Consolidated was well-placed. The P2Y proved to be an exceptionally capable patrol plane, establishing performance records and pioneering patrol squadron tactics that became the fleet standard well into World War II. When the P2Ys were stricken from Navy records, 41 of the 47 aircraft delivered were still operating, after more than six years of fleet and training command service.

## XP3Y-1

In 1932, with P2Y deliveries underway, the Navy announced a design competition for a new patrol flying boat, specifying a performance envelope that would significantly extend fleet capabilities. The new P-boat was to have a 3,000 mile range at a cruising speed of 100 mph and a maximum gross weight of 25,000 lbs. — nearly twice that of the XPY-1. Mac Laddon and the Consolidated engineering team welcomed the challenge of a new design effort, confident that the experience gained during the development of the P2Y and its record breaking performance in fleet operations assured a high probability of success for the new design.

The results of their effort was a radical new seaplane, unique enough in design to qualify for a patent (No. 92912 in Mac Laddon's name was issued by the U.S. Patent Office on 31 July 1934). Following a preliminary review of the proposal, the Navy on 28 October 1933, awarded a contract to Consolidated for further development of the design and construction of a single prototype under the designation XP3Y-1. The final step in the evolution to the PBY Catalina was underway.

Consolidated's major competitor for this Navy patrol plane contract was the Douglas company. Douglas, a respected firm with a reputation for the design and production of successful multi-engine aircraft, had proposed the XP3D-1 to the Navy as an entry in the 1932 competition. On 20 May 1933, five months prior to the award of the XP3Y development contract to Consolidated, Douglas received a contract to produce a single prototype of their design. The Douglas boat was not a new design nor as innovative as the Consolidated proposal. The Douglas XP3D was a modification of an earlier Douglas amphibian Army bomber, the YB-11, which underwent several changes and redesignations — to YO-44, then YOA-5, but had never gone into production. A shoulder wing monoplane, with two Pratt and Whitney R-1830 engines in pylon-mounted nacelles above the wing, it was similar to the commercial Dolphin and the USCG/Navy RD series utility transports. The XP3D was slightly smaller than the XP3Y and had marginally inferior performance in climb, speed and range. Douglas first flew their new P-boat on 6 February 1935, well over a month before the first flight of the Consolidated XP3Y.

The Consolidated XP3Y was exceptionally clean aerodynamically. Retractable floats formed the tips of a parasol semi-cantilever wing mounted on a pylon above the hull, with a pair of struts on each side providing additional support. The wing was a conventional aluminum alloy structure, metal-covered forward of the rear spar with fabric on the aft portion. Ailerons were fabric-covered metal structures. Full cantilever horizontal stabilizers were metal-covered with fabric-covered elevators. The integral vertical fin supported a fabric-covered rudder. Control surfaces were all provided with trim tabs.

Defensive armament consisted of a .30 caliber Browning machine gun mounted in the bow and manned by the bombardier, the waist gun positions on each side of the hull aft of the wing pylon accommodated a single Browning of either .30 or .50 caliber. Offensive armament provisions included under-wing stations outboard of the wing struts which could ac-



The XP3Y-1 at NAS Norfolk for flight tests. Original rudder configuration (seen here) was altered twice because of stability and control problems. Plane's colors are Light Gray on metal surfaces, and Aluminum paint on fabric surfaces. Top of the wing is Orange Yellow and lettering is Black. Beaching gear tall wheel was later moved to aft end of hull. (USN via Bowers)

commodate 100 lb to 1,000 lb bombs or, with an adapter on the bomb rack, a standard aircraft torpedo. A Norden Mk XV bombsight was located in the bow with a bombing window protected by a roll up venetian blind type of protective outer cover. The hull was divided into five compartments with water tight connecting doors to assure floatation in the event of hull damage. Crew stations were provided for a bombardier/bow gunner, two pilots, navigator, radioman, flight engineer, and two waist gunners. Bunks, cooking facilities and food storage were provided for crew support on long flights or for operations at advanced bases.

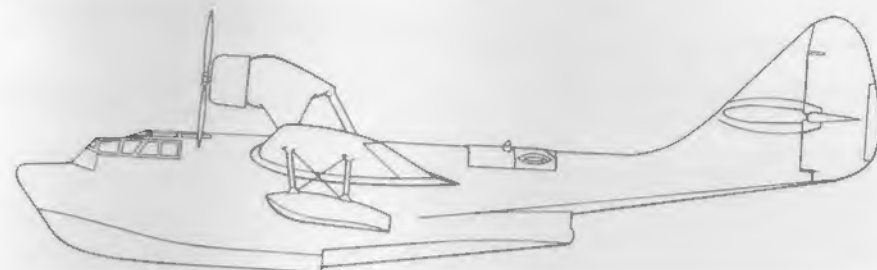
Engines specified for the XP3Y (and for the Douglas XP3D) were the new Pratt & Whitney XR-1830-58 Twin Wasps of 825 hp, mounted in wing leading edge nacelles with full NACA cowlings and adjustable trailing edge flaps. Integral fuel tanks with a capacity of 1750 gallons were incorporated into the wing center section between the nacelles. Pro-

The Douglas XP3D-1 prototype at San Diego in 1935 for flight tests. Color and markings like XP3Y. The Douglas design lost out because at \$90,000 the Consolidated P3Y-1 was \$20,000 cheaper. (USN via UTC)



pellers were three bladed constant speed, full feathering Hamilton Standard.

Construction of the new P-boat prototype at Consolidated's plant in Buffalo was started late in 1933 and continued through 1934, with completion early in 1935. To avoid any possible delay due to winter ice in the Niagara River seaplane operating area, an early decision was made to ship the XP3Y by rail to NAS Norfolk, where Navy facilities could be utilized for assembly, and ground and flight tests.



Douglas XP3D-1

## XP3Y Flight Tests

The XP3Y prototype arrived at Norfolk in early March 1935 and by mid-month, had satisfactorily completed the required preflight tests. On 21 March Consolidated test pilot Bill Wheatley made the first flight in the new boat — which was an unqualified success! Company test flying continued with no significant problems and on 28 March the XP3Y was delivered to the Navy at the NAS Anacostia test station for preliminary trials. Minor problems were encountered but none were significant or caused any delay. Gun firing flights were made in April, and in May the plane returned to Norfolk for rough water takeoff and landing tests. During a landing on 13 May the P-boat was damaged, but was quickly repaired and testing continued.

During these flight tests there were continuing reports of directional stability and control problems and a number of changes had been tried with no improvement. Bombing trials during May and June were unsatisfactory because of the marginal directional stability and high rudder forces. The rudder was reworked with added area but the change produced unacceptably high rudder forces, and the rudder was modified again.

In July the XP3Y was returned to Norfolk to continue rough water tests, and on 27 July, was extensively damaged during a landing. The hull bulkheads and water tight doors held and the plane was towed back to the NAS for repairs. Rough water trials were completed successfully in October off the Coronado Islands on the West Coast, following a record-breaking ferry flight from the East Coast via the Canal Zone.

The final report by the Naval Trial Board found the XP3Y-1 "Acceptable" for production. Several recommendations for improvement in flying qualities and operational capability included:

- Provide an additional gun station firing down and aft
- Improve the waist gun stations by providing better wind screens for the gunners.
- Improve bomb loading provisions.
- Modify the rudder and its control system to improve stability and directional control.
- Improve the bow gun station.



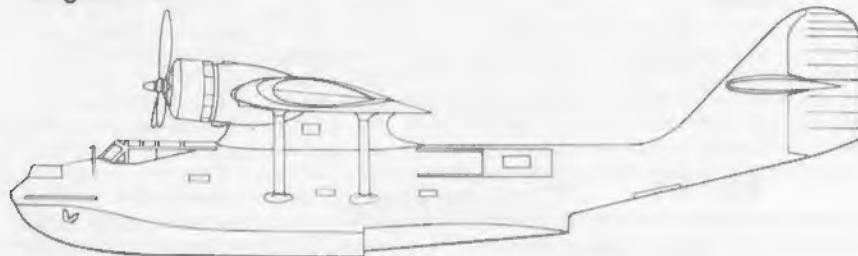
However, much more significant to the future of the PBY were the Board's findings regarding performance:

	ACTUAL	GUARANTEED
Maximum Speed	170.8	159
Minimum Speed	58	60
Service Ceiling	18,600'	15,000'
Take Off (secs)	22	60
Weight Empty	12,567 lbs.	13,046 lbs.

Consolidated signed a contract for 60 P3Y-1's on 29 June 1935 and the new plant at San Diego began tooling-up for the production run. Trial Board recommended changes included: new rudder, hull extension aft under the rudder, addition of another gun position in the tail compartment (promptly and forever after dubbed "the tunnel gun"), changes to the bow gun turret, nacelle changes and installation of production R-1830-64 engines.

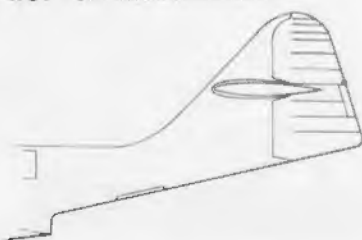
### XP3Y-1

#### Original Tail



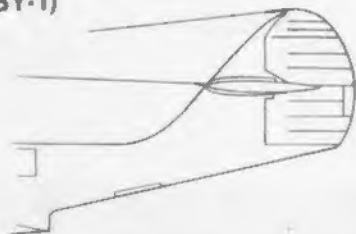
### XP3Y-1

#### First Tail Modification



### XP3Y-1

#### Final Tail Modification (XPBY-1)



The XP3Y was inducted into the San Diego plant for incorporation of these changes and was redesignated XPBY-1 on completion of the rework but retained the original Bureau of Aeronautics serial number (BuNo) 9459. Addition of the "B" to the designation recognized the new P-boat's capability of delivering a significant bomb load. Company pilot Bill Wheatley made a final demonstration flight and on 21 May 1936 the plane was delivered to the Navy for their flight tests. These were completed satisfactorily, with minor rudder and rudder control system changes being required. However, a major deficiency which had been detected early in the prototype's flight tests was directional stability and control. The modified rudder and rudder controls incorporated in production aircraft reduced the problem to an acceptable level, but it was not satisfactorily eliminated until a complete redesign of the vertical and horizontal tail surfaces by Navy engineers on the PBN, the PB2B-2, and the final PBY variant, the PBY-6A.

The Navy's high regard for the new PBY was further demonstrated by a follow-on contract for 50 PBY-2 boats awarded on 25 July 1936, two months before the first production PBY-1 was delivered in September!



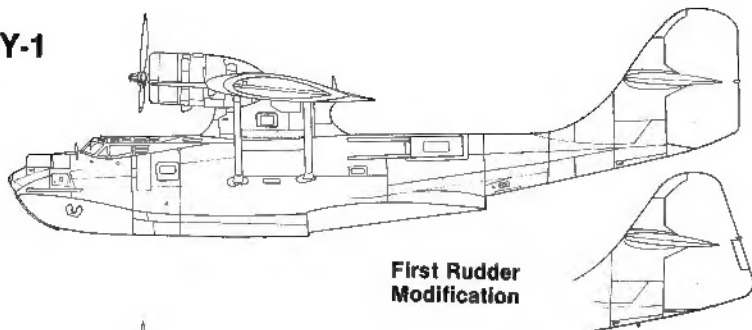
The extended rudder was an unsuccessful change made during flight tests to improve lateral stability. Unfortunately the new rudder proved to be uncontrollable during takeoff and provided little improvement in stability and control. (Smithsonian)

XP3Y-1 at San Diego with the final rudder change. This, and the hull extension under the tail, solved the water handling problem and improved stability and control. (Convair)

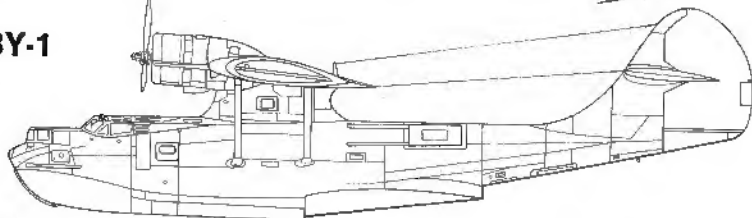


XP3Y prototype on completion of rework with new rudder, hull extension and revised bow gun turret. Redesignated XPBY-1 in May, the plane still carries old rudder markings. (Convair)

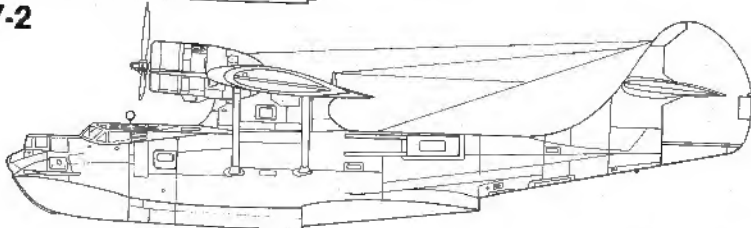
**XP3Y-1**



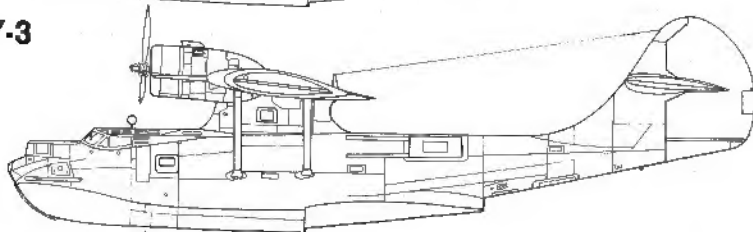
**XPBY-1**



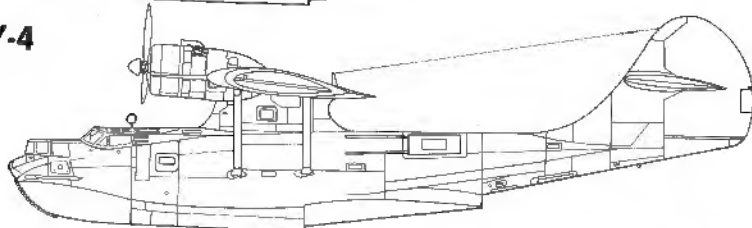
**PBY-2**



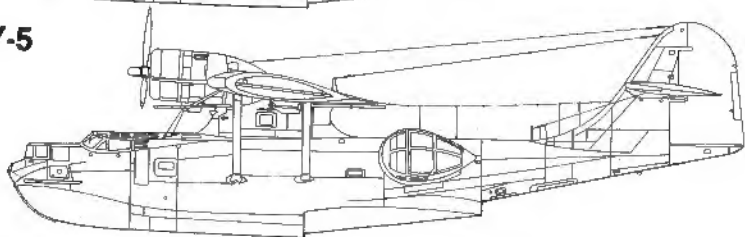
**PBY-3**



**PBY-4**

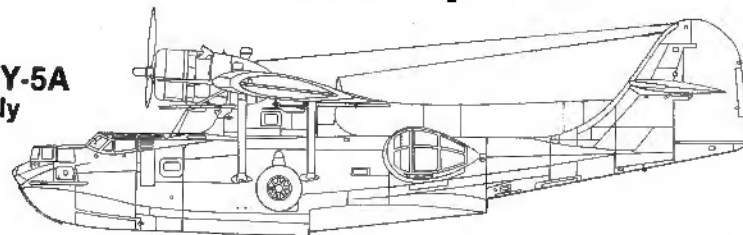


**PBY-5**

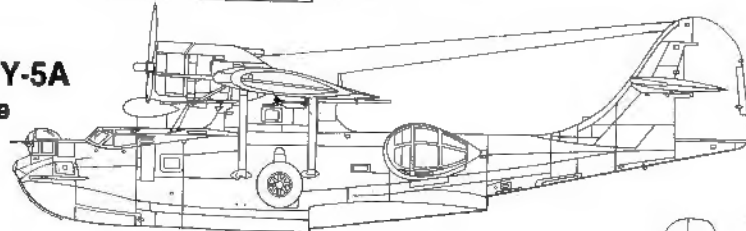


## PBY/Catalina Development

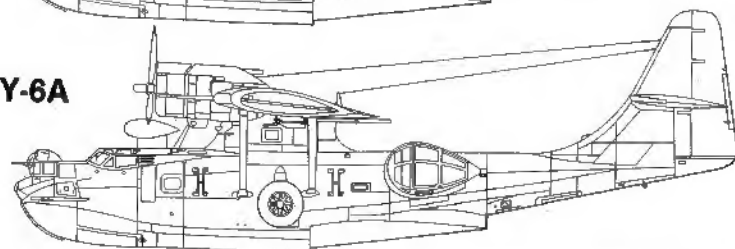
**PBY-5A  
Early**



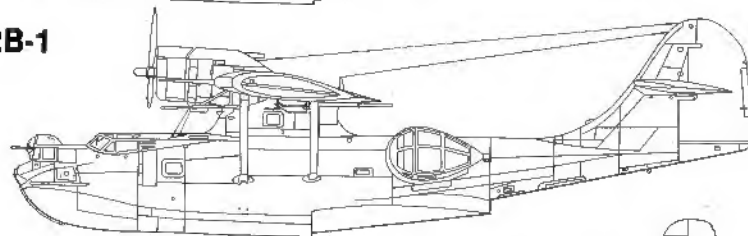
**PBY-5A  
Late**



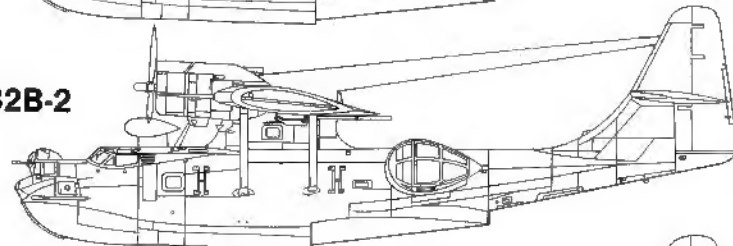
**PBY-6A**



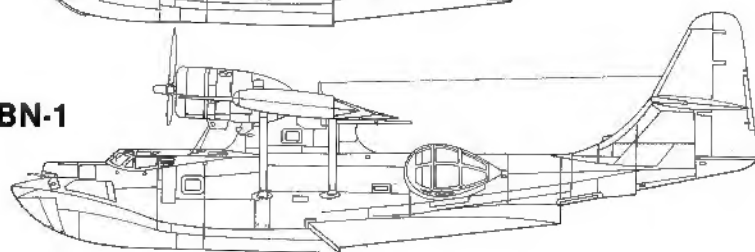
**PB2B-1**



**PB2B-2**



**PBN-1**



# PBY-1 Flying Boat

The Consolidated contract for the production of 60 PBY-1 flying boats at \$90,000 each, plus spares, was signed on 29 June 1935. Deliveries commenced in September 1936. On 5 October the first production PBY was accepted at the Consolidated plant at Lindbergh Field in San Diego by Navy crews and was taxied across the bay to the Naval Air Station on North Island. Patrol Squadron 11F is identified in Navy records as being the first fleet squadron to receive a PBY but VP-6F, also based at North Island, was the first squadron to carry a full complement of the new flying boat.

The PBY-1 was powered by a Pratt & Whitney R-1830-64 engine providing 900 hp at take off. Defensive armament consisted of a single .30 caliber in the bow turret, a single .30 for each sliding waist hatch, and a single .30 for the tunnel position. 1000 rounds of ammunition was provided for each position except the tunnel position which was provided with 500 rounds. .50 caliber machine guns could be mounted in the waist positions, with ammunition being reduced to 800 rounds. Offensive armament was four 325 lb depth charges, or 500 lb bombs, or four 1000 lb bombs, or two 1425 lb mark XIII torpedoes.

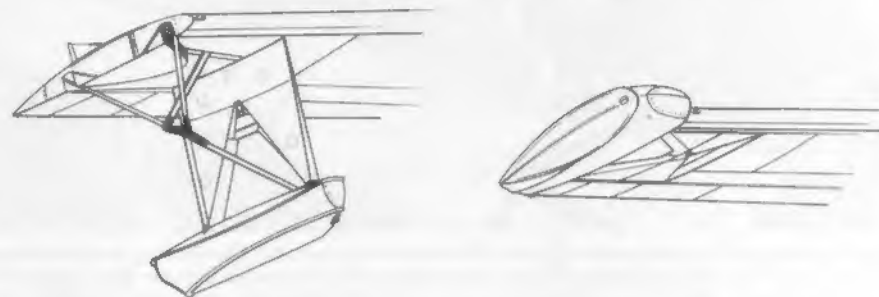
Fleet patrol squadrons experienced in operating the earlier P2Y had little difficulty in transitioning to the new Consolidated boat, which quickly began establishing a reputation for performance and reliability which would follow the PBY series through all its variants and operations. As with any new aircraft design, problems did appear as operating time accumulated on the new plane but most of them were minor and the Navy, Consolidated, and Pratt & Whitney quickly identified fixes which were incorporated by the squadrons, or by company field service personnel.

In a flawless demonstration of the new patrol plane's capability, Pearl Harbor based VP-6F ferried 12 of them from San Diego, where the squadron had accepted and transitioned to the new boats, across the Pacific to Hawaii. The squadron departed San Diego in formation late in the afternoon of 27 January and, 21 hours and 48 minutes later, arrived over Pearl Harbor in formation. This was the first of the "routine" mass delivery flights of PBYs

which would make headline news for the next several years. In April 1937, VP-11F ferried another 12 of the PBY-1s to Hawaii, and in June, VP-3F flew 23 to its base at Coco Solo, in the Canal Zone, a 3,292 mile flight in 27 hours 58 minutes. All of these flights were completed as scheduled and without incident or mechanical difficulty.

The PBY-1s continued in fleet patrol squadron use until late 1941, the last one being transferred on 25 November 1941. At least 3 of them in Hawaii, survivors of the 7 December attack, were reissued to VP squadrons as replacements for PBYs lost during the Japanese attack on Pearl Harbor and NAS Kaneohe. A few of the PBY-1s continued to serve in fleet utility squadrons during the early war years, but most of the survivors (by the end of 1941 only 6 of the original 60 produced had been lost) were assigned to training squadrons at Jacksonville and Corpus Christi. The last -1 was stricken from the Navy list at Corpus Christi on 31 January 1945.

## Retracting Wing Tip Stabilizer Float



A PBY-1 of VP-12 at Sands Point, Washington on 7 July 1937. The venetian-blind cover in the nose protected the bombing window. (Gordon Williams)

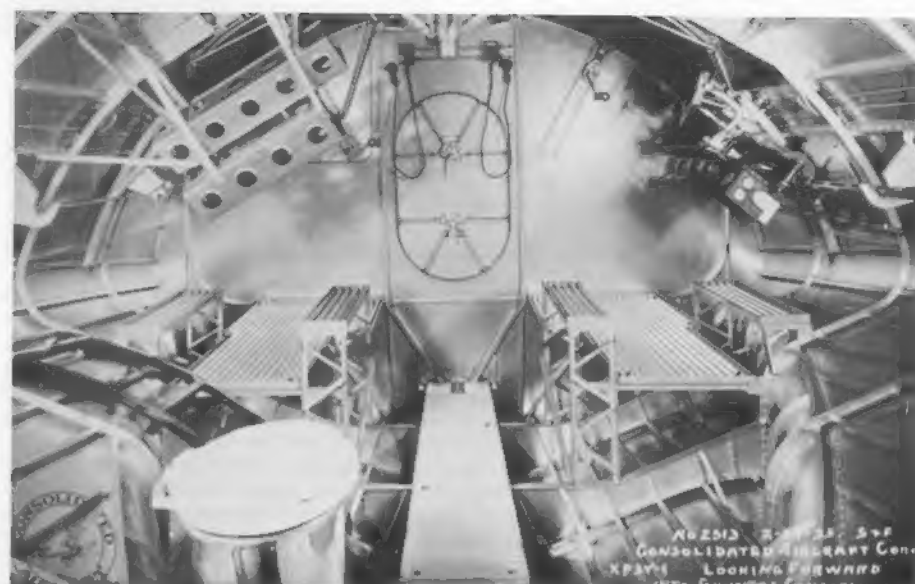
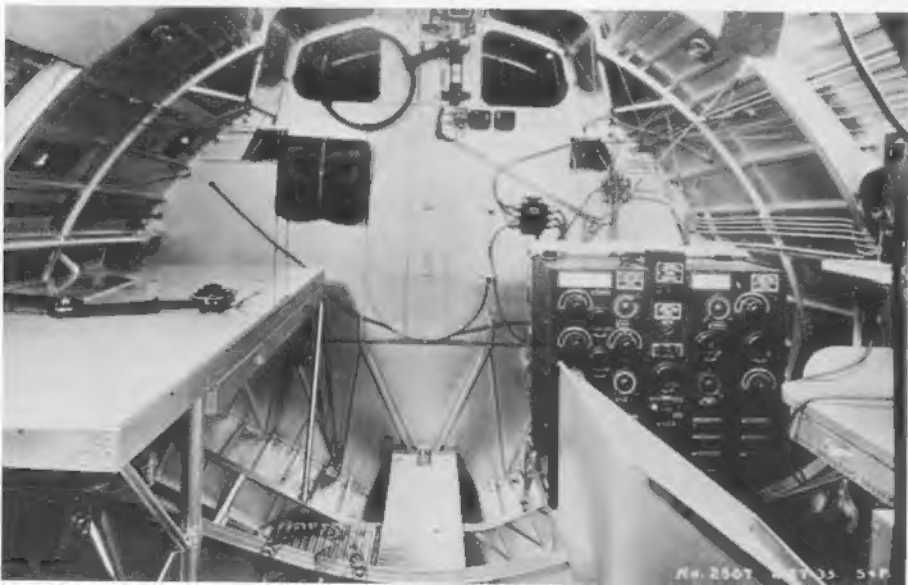






Uncluttered instrument panel reflects 1935 state of the art. Bar connecting control wheels is the "yoke" — a hang over from early Deperdussin flight control system. Black pads visible in the bow below the instrument panel, are for bombardier to kneel on while at the bombsight. (Convair)

Navigator's table, left, with a seat that swiveled around aft support post. The radioman's position is on the right. Radio Direction Finder (DF) loop antenna is stowed on top of the bulkhead. (Convair)



Looking forward through the waist gun compartment, which remained unchanged until the gun blisters of the PBY-5. At lower left is toilet, behind it the stowed entrance ladder. Racks for 50-round canisters of .50 cal ammunition are at upper left. A stowed gun, right, has ammunition canisters in place on gun mount. (Convair)

Flight tests of the XPBY had dictated major changes in the engine mounts. Original engine mount was secured directly to wing spar with no fire wall, and cowling and cowl flaps had been a single unit. (Convair)





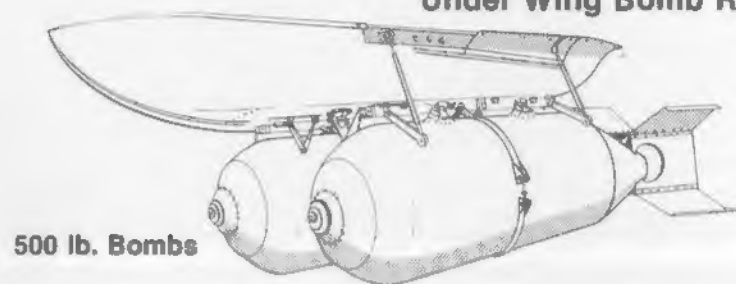
Bomb racks were attached under each wing just outboard of the struts. 3-P-1 is moored at Pensacola during 1938. (Author)

Consolidated delivered PB1Ys complete with squadron codes and markings. VP-12's number 10 PB1Y-1 had Black cowl rings, hull band and wing center section chevron as section leader plane for fourth section (10, 11 and 12). Rudder stripes are believed to be Willow Green. Hull and other metal surfaces are painted Aluminum, as are lower wing surface and tail. Top of the wing is Orange Yellow. (USN via R.W. Weber)



PB1Y-1 of VP-12 moored at NAS Sands Point, Washington during July, 1937. The wing chevron is White. (Gordon Williams)

## PB1Y-1 Under Wing Bomb Rack



500 lb. Bombs





A set of folding work stands was delivered with USN PBVs and was indispensable for line maintenance. When moored to a buoy and work was required while in water, crews rigged a tarpaulin under the stands to catch dropped tools or parts. (Author)

USS Langley, USN's first aircraft carrier, became a seaplane tender when more capable carriers joined the fleet. Langley and VP-12 PBV-1s are engaged in an advanced base training exercise. (USN via R. L. Lawson)



Prior to WW II, squadrons did all maintenance, using special equipment like this prop' hoist, developed by the Navy and Consolidated. Beaching gear allowed the boats to be quickly and easily moved from water to shore. (Smithsonian)

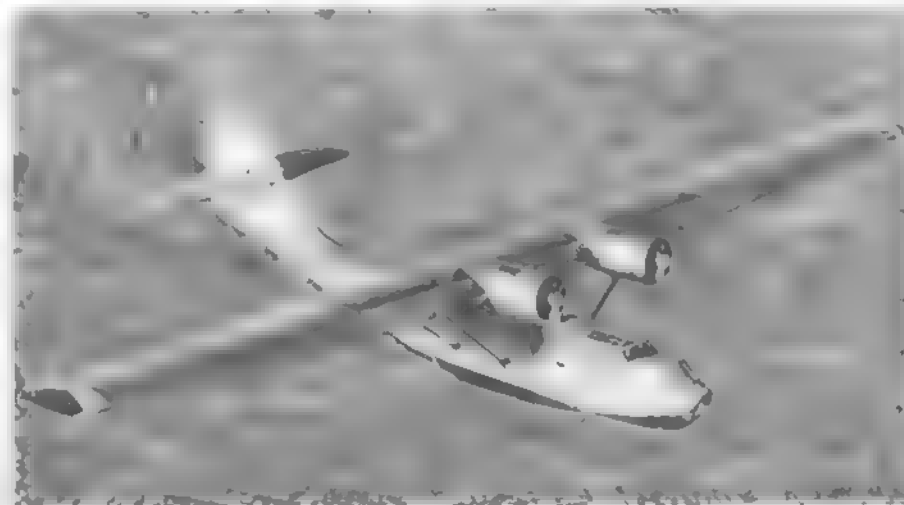




## GUBA

First civil PBY was sold in 1937 to the American Museum of Natural History for the Archbold expedition to New Guinea and was named Guba (Papuan for "fierce storm"). It was purchased by the Russian government for a massive rescue effort when the aviator Levanensky was lost during a trans-polar flight. (Convair)

Consolidated also sold 3 modified PBY-1s to Russia in 1937 under the designation Cargo Mail Boats. This aircraft was disassembled and delivered by ship to Russia. (Convair)



by P&W engines. Instead they were equipped with the Wright Cyclone R-1820 G3 already in production under license in the U.S.S.R. The few photos released of the GST show an enclosed engine cowling front, probably for cold weather operations, and a bow gun enclosure quite different from that of the PBY.

Consolidated's first commercial boat in the PBY series was GUBA, a modified PBY-1 licensed as a Model 28-1. GUBA was purchased in 1937 by Dr. Richard Archbold to be used in support of a planned expedition to the interior highlands of New Guinea. However, during the Summer, the Russian aviator Levanensky and his crew were lost in the Arctic during an attempted transpolar flight and the Russian government, seeking long range aircraft to be used in a massive rescue effort, persuaded Archbold to release GUBA to them. The boat was used by explorer-aviator Sir Hubert Wilkins, who headed the long, but unsuccessful search. GUBA was taken to Russia and apparently continued in use as a utility transport. During World War II, the old GUBA was finally lost while moored in the harbor at Novaya Zemlya after a flight to that Arctic island for the U.S. Naval Attache, Capt. Samuel Frankel. The flying boat was destroyed during a bombardment of the harbor by a German U-boat on 25 July 1942.

## Russian Cargo-Mail Boats

Impressed by GUBA's performance, the Russians negotiated a contract later in 1937 with Consolidated for three Model 28-2 boats, a license for production, and engineering support in the establishment of an assembly plant.

One of the Model 28-2 aircraft, basically a PBY-1, was completed and test flown in San Diego, then disassembled and shipped to Russia. The other two were completed as sub-assemblies prior to shipment and were to be used in the preparation of tooling for the Russian production facility being built at Taganrog on the Sea of Azov. It is estimated (no production figures have ever been released) by the Consolidated engineers who were there, that as many as 150 of the Russian-built PBYs, designated GST, could have been completed prior to the German invasion of the area in 1941.

The 3 CARGO-MAIL BOATS were the only PBYs built in the U.S. that were not powered

# PBY-2 Flying Boat

A contract for production of the PBY-2 model had been signed on 25 July 1936 more than a month prior to the delivery of the first PBY-1. The 50 -2s ordered were essentially the same as the earlier model and were powered by the same Pratt & Whitney R 1830-64 engines of 850 HP. A new, solid one piece horizontal stabilizer with inset elevators was a major change. A cutout was added to the rudder for clearance. Fourteen of the production batch were equipped with the Curtiss electric propellers. These were the only PBYs not equipped with Hamilton Standard props.

The first PBY-2 was completed in June of 1937, with Patrol Squadron 11 at San Diego being the first fleet unit to receive the new model, having 12 on hand by October 1937. VP-2, from Coco Solo, had accepted 12 by the end of November, and Pearl Harbor based VP-10 received another 12 by the end of the year. VP-7 and VP-17 were partially equipped with -2s by the end of January 1938 as the last of the new P-boats were delivered.

Following a precedent established with the PBY-1 squadrons being equipped with the new model moved to San Diego for transitional training, then flew the new planes back to their regularly assigned base.

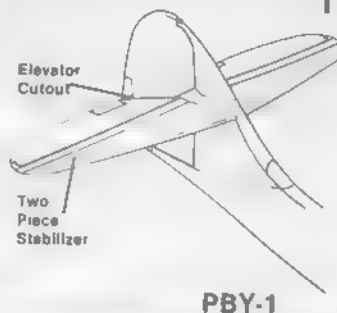
VP-2 flew 14 PBY-2s to Coco Solo in the Canal Zone on 8 December 1937. On 19 January 1938, pioneer Transpac squadron VP-10 (which had flown 6 PBY-1s to Hawaii in the first such 'routine transfer' on 10/11 January 1934) again made the long flight to Hawaii with 18 PBYs, covering the 2,553 miles in 20 hours 30 minutes. The last fleet PBY-2 was transferred from the VP squadrons to the training command on 21 May 1942. The last PBY-2 was stricken from the Navy list on 30 April 1945.

The first PBY-2, BuNo 0454, was delivered to VP-11 on 15 May 1937. Markings for No. 12 are Black lower cowl ring and wing chevron. Rudder stripe color is undetermined. (Convair)

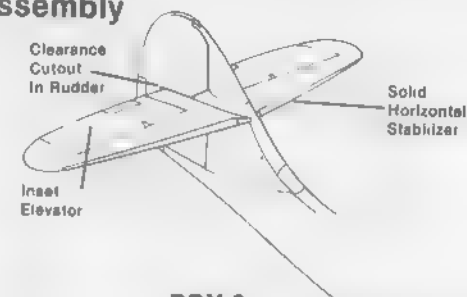


Curtiss electric propellers were tried on first 12 aircraft and numbers 44 and 45 of the PBY-2 production run, but proved unreliable, and were quickly replaced by Hamilton Standard propellers, as used on earlier models. (Convair)

## Tail Assembly



PBY-1



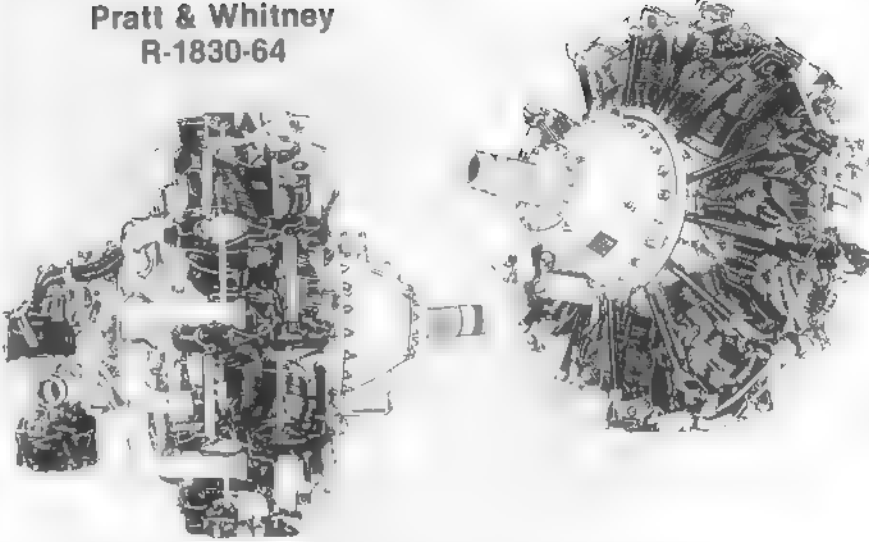
PBY-2





**VP-2 PBY-2 picks up an injured man from SS Santa Clara in 1938 after an open sea landing. Patrol squadrons frequently carried out such missions. (Archives)**

**BuNo 0455 of VP-10, PatWing 2, based at Pearl Harbor during 1939. Black diamonds have been painted over the aluminium painted rudder, the lower hull and floats are also painted black. (Smithsonian)**



**Pratt & Whitney  
R-1830-64**







## GUBA II

In December 1937 Consolidated delivered a replacement plane to Dr. Archbold for his expedition to New Guinea. A modified PBY-2 it was designated Model 28-3 and carried the same civil registration as that originally issued to GUBA I — NC 777. The boat was flown across the Pacific in June 1938 to New Guinea where it was extensively used to support the expedition during the following 11 months. On completion of the expeditionary project GUBA II was flown back to the US, the long way — around the World. The flight terminated at the New York City World's Fair then in progress. In October 1940, the British purchased GUBA II for use by BOAC in West African transport service. The plane provided excellent service until it was severely damaged by a storm and scrapped in 1944.

Guba II unloading supplies at Lake Habbema. The PBY was a spectacular success, delivering tons of material the 300 miles from Hollandia to the lake at 12,500 ft. altitude. (American Museum Nat. Hist.)

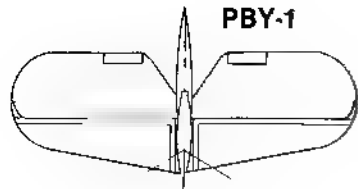


A training Command PBY-2 at Jacksonville on 5 June 1942. As Fleet PBY-2s were replaced by newer variants, older planes moved to training squadrons. Fleet markings, other than plane numbers, were not usually removed, this PBY carries a Red rudder, White hull band, and mixed engine cowl colors. (Archives)

After spending eleven months in New Guinea, Guba II was flown to New York where the World's Fair was in progress. It was later sold to Great Britain and was operated in West Africa by BOAC where it carried the code G-AGBJ. (George Haddad)

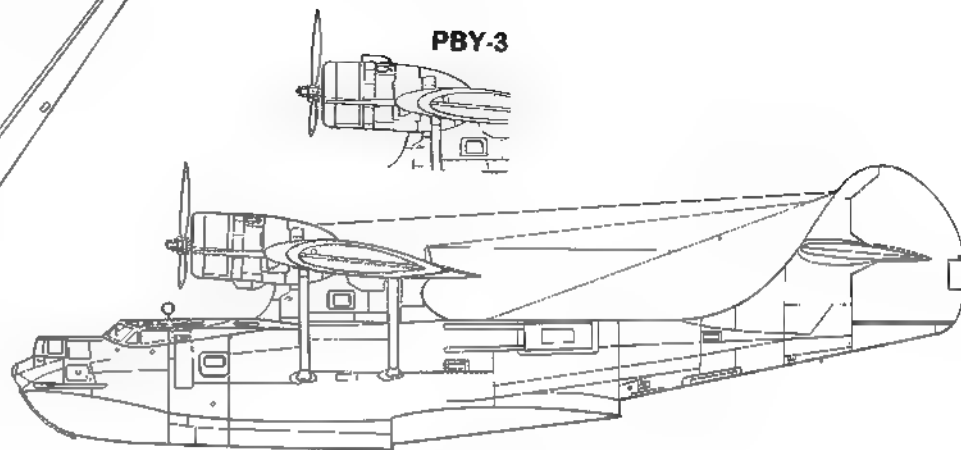


PBY-1



PBY-2

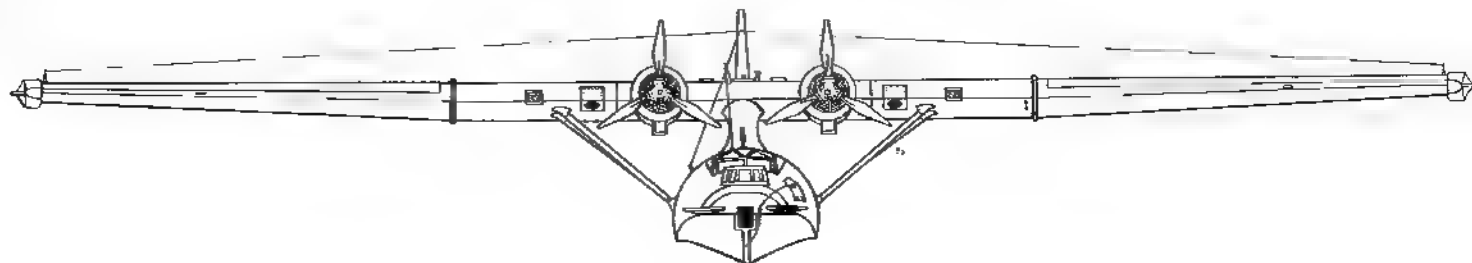
PBY-3



## Specifications

### PBY-2

Length:	63 feet 8 inches
Wing Span:	104 feet
Height:	18 feet 6 inches
Gross Weight:	22,490 lbs.
Maximum Speed:	178 mph at 8000 feet
Service Ceiling:	21,100 feet
Range:	2,131 miles
Powerplant:	P & W R-1830-64
Horse Power:	850 hp



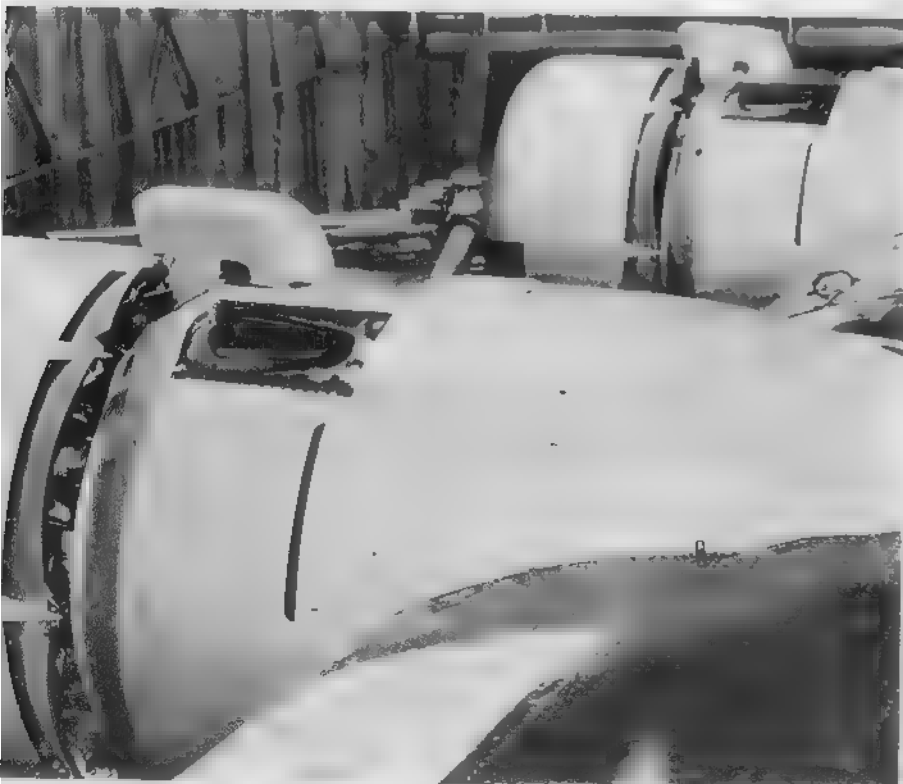
# PBY-3 Flying Boat

Sixty-six of the PBY-3 variants were ordered in November of 1936, continuing the precedent of ordering a new model prior to the delivery of the current production version. Fleet operating experience dictated some minor changes but the new plane was essentially similar to the earlier models. A new Pratt & Whitney R-1830-66 engine, rated at 900 HP was installed and produced a modest improvement in performance in spite of a higher gross weight — the result of minor structural changes and added equipment. The down draft carburetor required by the new engine dictated an air intake on top of the engine nacelles.

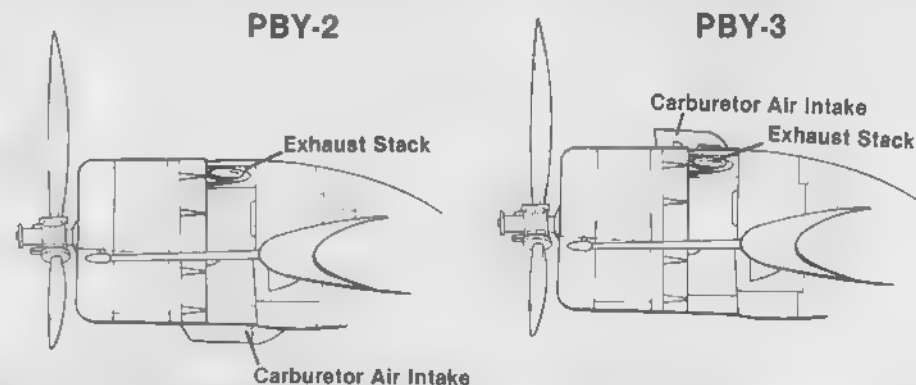
San Diego based VP-7 and VP-9, Pearl Harbor based VP-4 and VP-18, VP-5 from Coco Solo, and Seattle's newly commissioned VP-16, all received the PBY-3 during 1937/38. Both VP-4 and VP-5 ferried the new aircraft from San Diego, continuing the policy of having fleet units move their aircraft from the delivery point to their bases.

VP-21 and VP-22 at Pearl Harbor, and VP-32 at Coco Solo were all PBY-3 equipped squadrons on 7 December 1941. Six of the VP-22 PBY-3s were destroyed during the attack on Pearl Harbor, as were 3 of those assigned to VP-21. The last fleet PBY-3 was with VP-32 at Coco Solo when it was retired on 11 March 1943. Like its older sisters, -3s served well in training command, with the last one being stricken on 31 May 1945.

The PBY-3 was powered by the new Pratt & Whitney R-1830-66 engine which used a down draft carburetor, causing the air intake scoop to be moved from the underside of the engine nacelle to the topside. (UTC)



PBY-3 of VP-7, just off the beaching ramp, is being prepared for beaching. Color of tail stripes have not been determined. Plane number is painted on both sides of the wing upper surfaces. Center section chevron is True Blue, color of the 3rd section which included planes 7, 8 and 9. (USN via E. Cassagneres)



VP-9 number 5 at Sands Point in 1938. PBY-3 air intake is silhouetted on top of the engine nacelles. Track and mount for starboard waist gun can be seen through open waist hatch. (Gordon Williams)







VP-9 flew PBY-3s to Seattle's Lake Washington on an advanced base exercise in August 1938. At least five additional boats can be seen in the background (Gordon S. Williams)

# PBY-4 Flying Boat

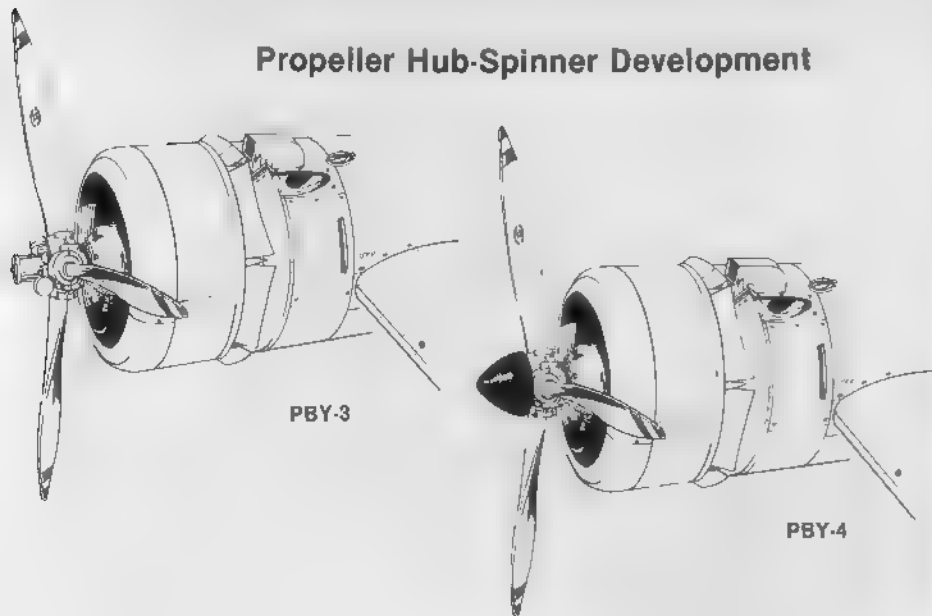
Only thirty-three PBY-4s were ordered under a contract signed 18 December 1937, the smallest number of any of the PBY variants, with all but the last four, which served as prototypes and test beds for the later -5 variants, being essentially similar to the earlier -3 variant. The PBY-4 was powered by the new P&W R 1830-72 engine, rated at 1050 HP at takeoff and 900 HP at 12 000 ft where top speed was 197 mph. The propeller hubs were covered with spinners, which would be unique to the -4 series.

The last three aircraft delivered in the -4 series, BuNos 1241, 1242 and 1243, were modified by the installation of a prototype version of what would become the Catalina trademark, the waist gun position blisters. In addition to the blisters, 1241 was fitted with a new vertical tail designed for the PBY-5 and with prototype engine nacelles.

The first aircraft of the new series was delivered to VP-1 at San Diego in mid-1938 and by June 1939 the squadron had 15 on hand. VP-1, a Pearl Harbor PatWing 2 unit, had turned in its PK-1 biplanes and moved to San Diego for outfitting and training. On completion of the transition, the squadron made the Transpac flight back to Hawaii on 28 June 1939. In September VP-1 was redesignated VP-21 and ordered to the Philippines to join the Asiatic Fleet. Proceeding via Midway, Wake and Guam the squadron completed the pioneering flight without incident, becoming the first significant element in a planned build-up of the U.S. Navy's Far East aviation forces. In 1940, with commissioning of Asiatic Fleet PatWing 10 imminent, the squadron was renumbered again, this time back to VP-1.

The only other squadron to be PBY-4 equipped was VP-18, another PatWing 2 unit. By mid-1939 the squadron had 16 of the new PBY-4 boats on hand and had been redesignated VP-13, but was again redesignated to VP-26 after the July 1939 Patrol Squadron reorganization had been implemented. And that was not yet the final change! Like VP-21 the preceding year, VP-26 was ordered to the Philippines and after a trans-Pacific flight via the route pioneered by VP-21, arrived in the Manila area on 16 December 1940, reporting for duty to the newly commissioned Patrol Wing 10 based at the Cavite Naval Station. Assignment to the new wing necessitated a final change in designation for both the squadrons, VP-1 becoming VP-101 and VP-26 becoming VP-102.

## Propeller Hub-Spinner Development



Number 15 of VP-13, a standard PBY-4 has had deicers installed. Spinners are a -4 recognition feature. Black center section chevron, lower half of cowl rings and the 12 on the wing indicate that this aircraft had been coded 13-P-12. (Archives)

Another de-icer equipped PBY-4 belonging to VP-13. This machine also carries an unusually high aircraft number. (Author)





VP-21 (formerly VP-1) arrived in the Philippines during September of 1939. Tension in the area prompted application of U.S. flags to top of hull, aft of waist hatches and under wings inboard of standard stars. (Stewart via Larkins)

PatWing 10 PBV-4 in the Philippines painted in a locally developed camouflage scheme. Colors have not been identified but are believed to be shades of Gray and Blue. Photographic evidence indicates that VP-101 and 102 aircraft were in this scheme as early as May 1941. (Stewart via W.T. Larkins)



# Transatlantic

A commercial version of the PBY-4 was sold to American Export Airlines and delivered in June of 1939. Registered NC 18997, the boat was named TRANSATLANTIC and was used for survey flights on North Atlantic routes being proposed by the air line for mail and cargo flights. It was flown by a crew headed by one of the US Navy's best known and most respected big boat pilots, Warrant Officer Patrick J. "Pappy" Byrnes. The TRANSATLANTIC was eventually taken over by the US Navy (99080) in 1944 and used as cargo aircraft.

## American Export Airlines



American export Airlines' TRANSATLANTIC. Note that the "C" in the registration is blocked in this photo, probably because of incomplete tests or documentation. Note that the TRANSATLANTIC does not have propeller spinners. (Convair)

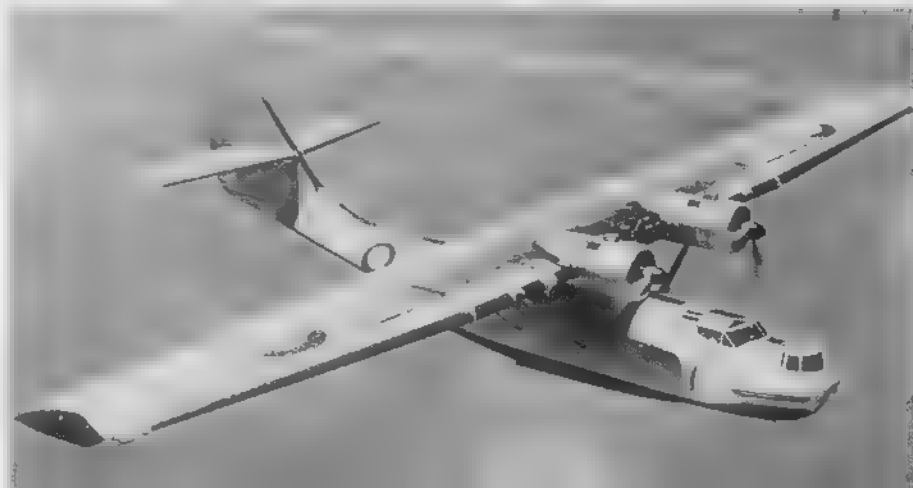


# P-9630

Consolidated's final commercial PBY sale was another modified PBY-4, purchased by the British in July 1939 to evaluate the design. On delivery, the boat was ferried by the GUBA crew from San Diego to Felixstowe, the British experimental and test base. The flight, via Botwood, was the first Transatlantic delivery of a military aircraft during World War II. P-9630 was thoroughly tested at the Marine Aircraft Experimental Establishment at Felixstowe by RAF squadron personnel, who were favorably impressed.



Under the civil designation export Model 28-5, the RAF purchased and evaluated a PBY-4 at Felixstowe in 1939. The British boat carried the RAF serial number P-9630 and was powered by a pair of R-1830-S1C3C engines. (Convair)





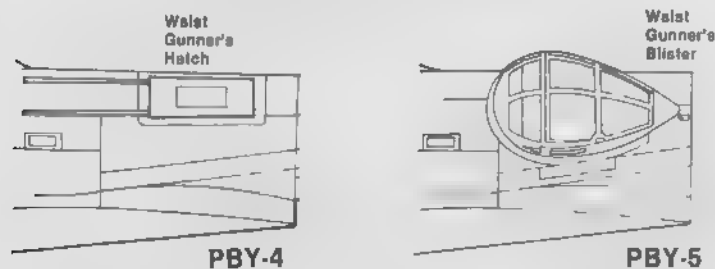
# PBY-5 Catalina Flying Boat

The autumn of 1939 initially looked bleak for the Consolidated PBY program, it had been nearly a year since the last PBY-4 had been delivered to the Navy, and prototypes of new flying boats were under development. First line service days of the PBY seemed to be nearing an end, and Consolidated had the advanced model 31 under development. However, the British declaration of war on Germany after Hitler's invasion of Poland in September, immediately brought an order from the RAF for 106 Consolidated Export Model 28-5s (PBY-5s) under the British designation Catalina I. And on 20 December 1939 the US Navy signed a contract for 200 PBY-5s. The Navy's order for 200 PBYs, the largest order the Navy had placed for a aircraft since World War I, was justified by the escalating demands for patrol aircraft in order to implement the Neutrality Patrol established in September 1939.

The PBY-5 incorporated modifications that had been tested on the last three delivered PBY-4s. The extensively redesigned tail featured a squared-off rudder and new horizontal stabilizer and elevators. Waist gun blisters replaced the sliding hatches and waist armament was standardized on .50 caliber machine guns. The -5 was powered by a pair of uprated Pratt & Whitney R-1830-82 engines which provided 1200 HP each at take-off. Internal changes to the engine permitted the use of Hamilton Standard Hydromatic propellers. Top speed was 200 miles per hour and range was 1965 miles. The RDF loop was relocated from just behind the cockpit to a position on the wing, near the leading edge between the engines.

The first PBY-5 was accepted by the Navy in September 1940. And the second PBY-5 boat accepted, BuNo 2290, was transferred to the US Coast Guard as V-189. A Navy contract calling for an additional 90 PBY-5s was signed on 15 September 1941. Following the British lead, who had ordered their PBYs under the Catalina designation, the US Navy officially adopted the name "Catalina" in October 1941.

## Waist Gunner Position

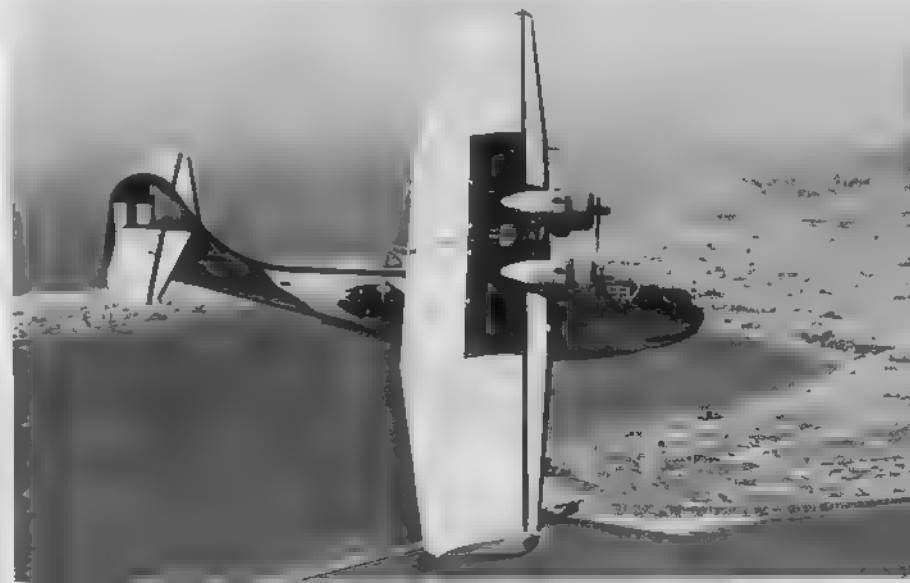


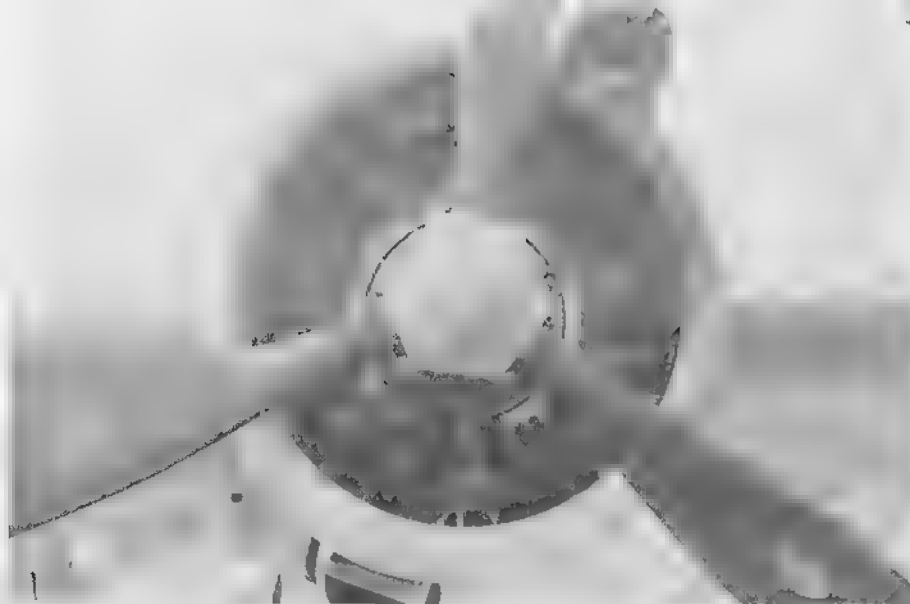
13-P-12, PBY-4 BuNo 1241, was prototype for PBY-5 design changes - new tail, waist blisters and new nacelles. PBY-4 had factory installed provisions for wing and tail deicers (Archives via D. Lucabaugh)



The outside portion of the blister slid up and under the top section, giving the gunner an excellent field of fire. Canvas sea anchors (on hull between blisters) were used during taxi on water to assist in control. (Author)

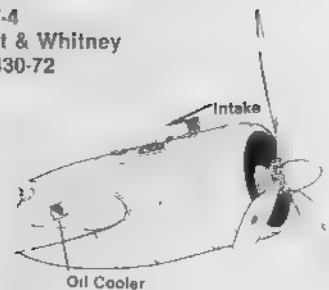
The second PBY-5 to roll off the assembly line, BuNo 2290 was turned over to the US Coast Guard. Recoded V-189, it was the first of many US Coast Guard PBYs. Aluminum overall with Orange Yellow top of wing. Rudder colors are Blue at top with Red and White vertical stripes. (USN)



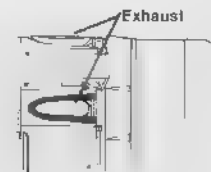
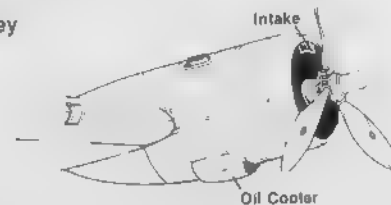


The new Pratt & Whitney R-1830-82, which powered the PBX-5 had a downdraft carburetor, with the airscop inside the cowling at top center. The oil cooler housing is at bottom of the nacelle on starboard side. (USN)

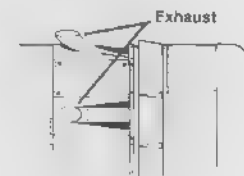
PBX-4  
Pratt & Whitney  
R-1830-72



PBX-5  
Pratt & Whitney  
R-1830-82



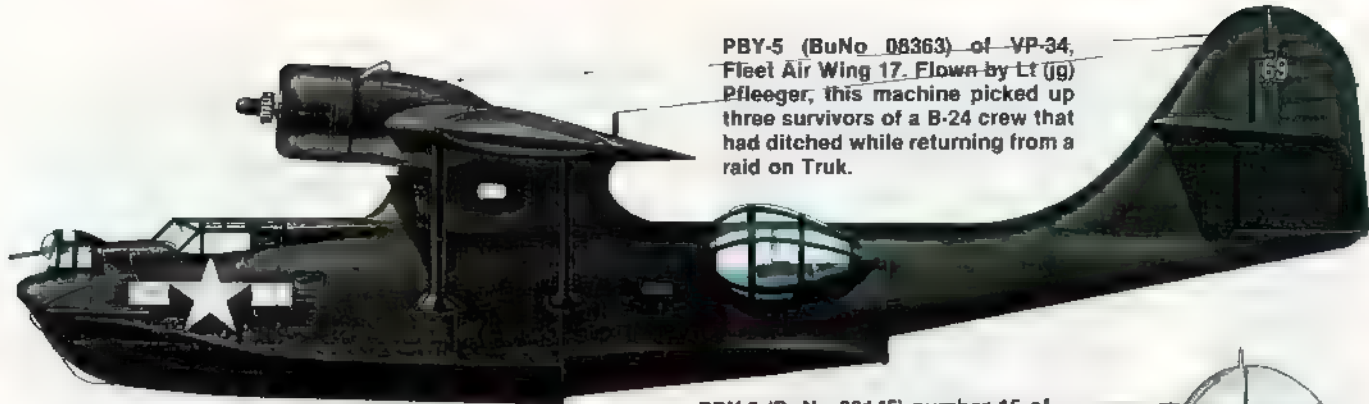
PBX-4



PBX-5

Author's plane was Patron 52 number 7 at NAS Quonset Point, R.I., in 1941. BuNo 2293 was an early -5 transferred from VP-14 to VP-52 in February 1941. Hull, bottom of wing and tail are painted Aluminum, and top of wing is Orange Yellow. White tail color was assigned to Patrol Squadron 52. Section colors are True Blue hull band and wing chevron; cowling rings should also be True Blue, but are not painted. (Author)



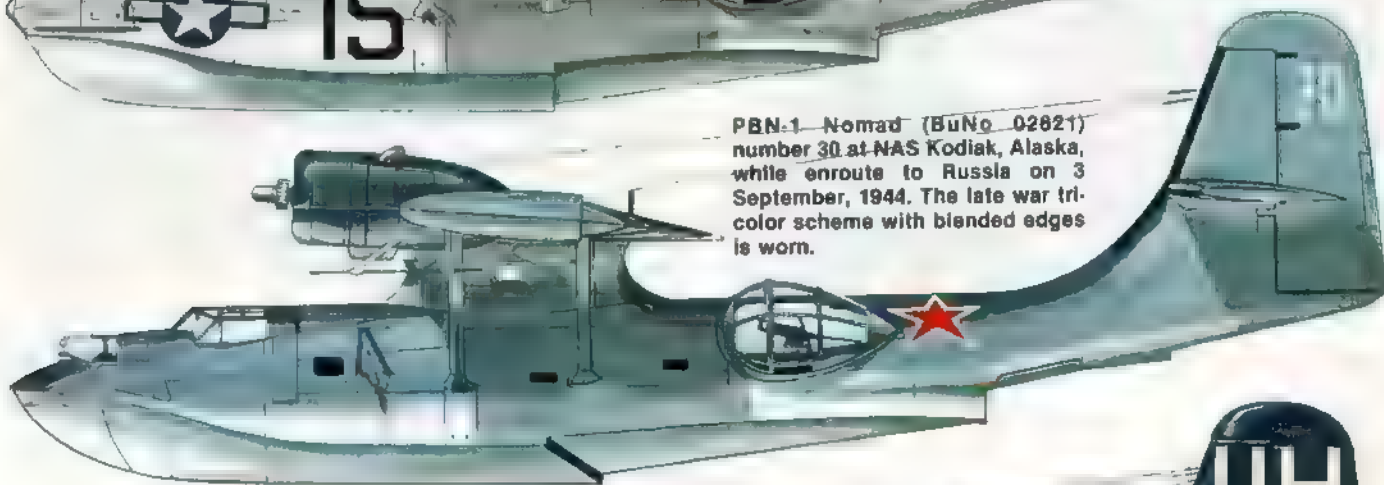


PBY-5 (BuNo 08363) of VP-34, Fleet Air Wing 17. Flown by Lt (jg) Pfeleger, this machine picked up three survivors of a B-24 crew that had ditched while returning from a raid on Truk.

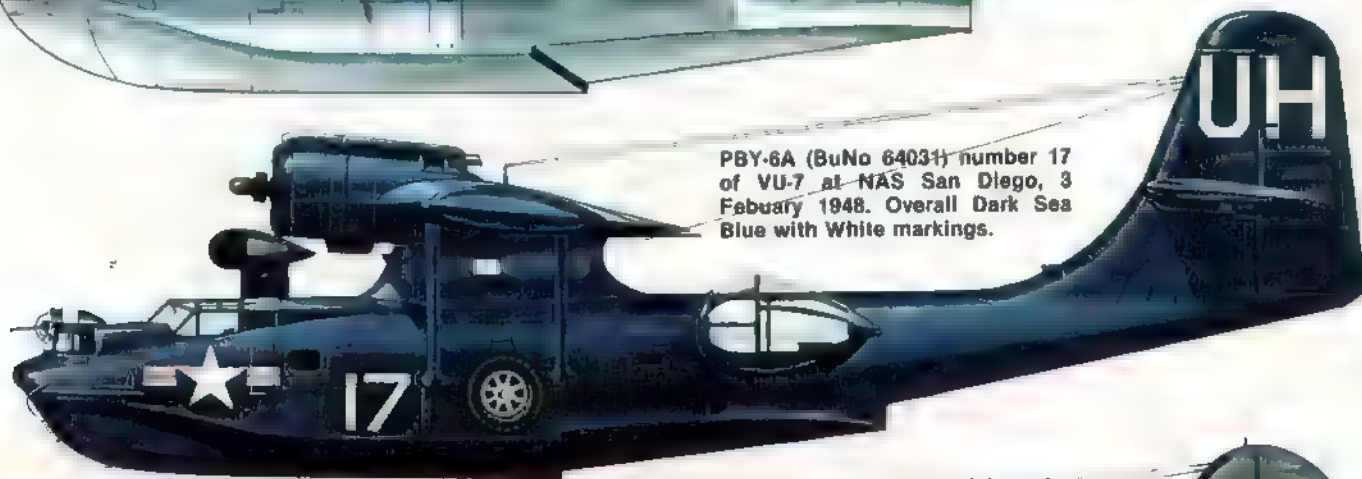
Flown by Lt. (jg) T. R. Woolley, this Catalina teamed with a PV-1 Ventura from VB-127 and a British surface craft to sink the U-781 in the Straits of Gibraltar.



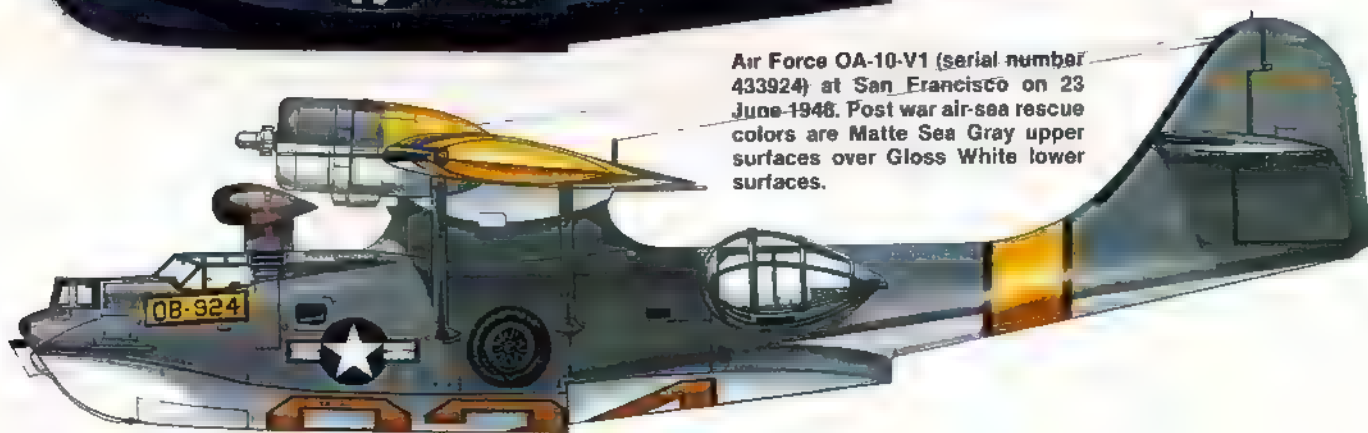
PBY-5 (BuNo 08145) number 15 of VP-63, Fleet Air Wing 15, Port Lyautey, French Morocco on 24 February 1944. The color scheme is the Atlantic tri-color of Dark Gull Gray, Light Gull Gray over White under surfaces.



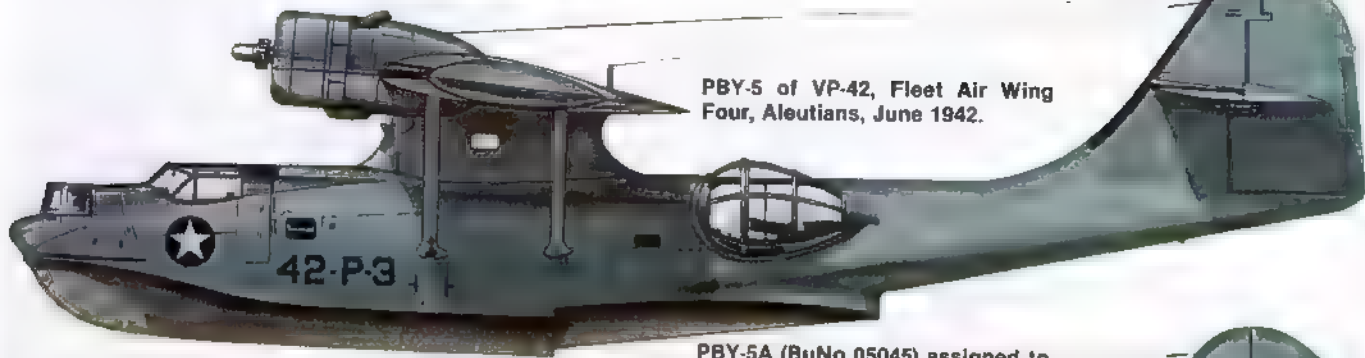
PBN-1 Nomad (BuNo 02821) number 30 at NAS Kodiak, Alaska, while enroute to Russia on 3 September, 1944. The late war tri-color scheme with blended edges is worn.



PBY-6A (BuNo 64031) number 17 of VU-7 at NAS San Diego, 3 February 1948. Overall Dark Sea Blue with White markings.

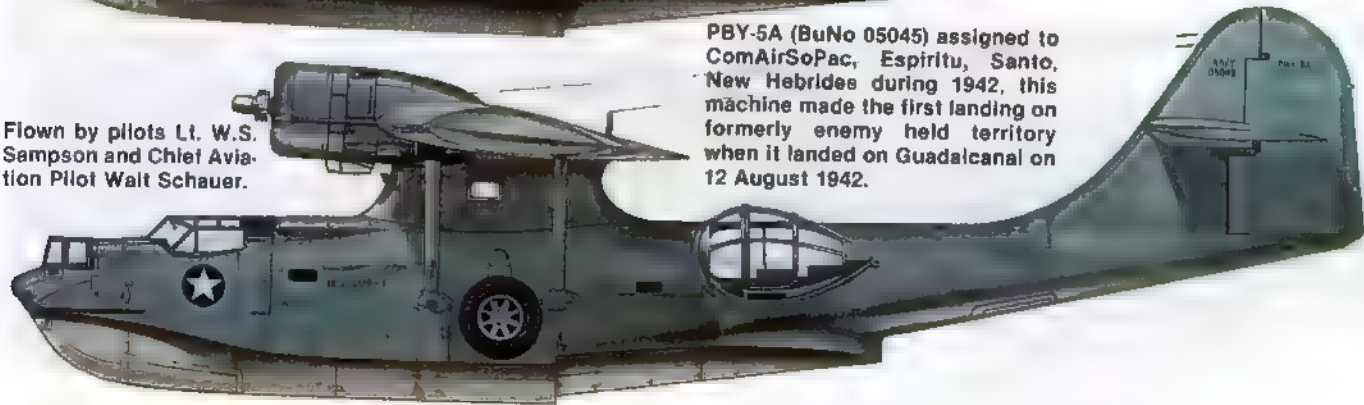


Air Force OA-10-V1 (serial number 433924) at San Francisco on 23 June 1948. Post war air-sea rescue colors are Matte Sea Gray upper surfaces over Gloss White lower surfaces.

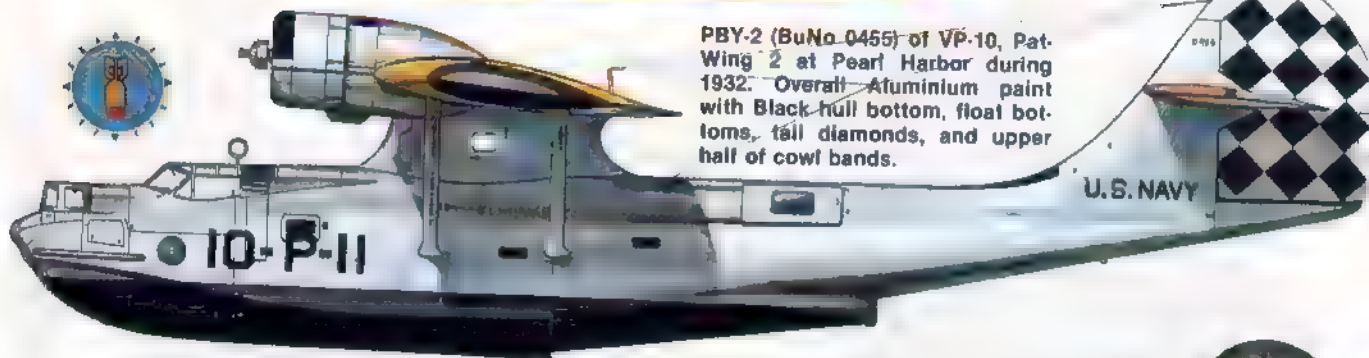


PBY-5 of VP-42, Fleet Air Wing Four, Aleutians, June 1942.

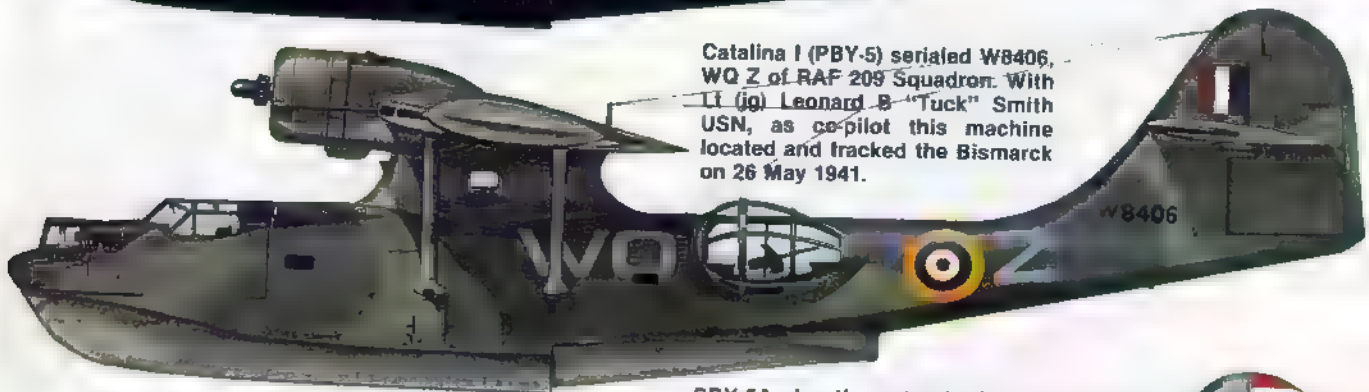
Flown by pilots Lt. W.S. Sampson and Chief Aviation Pilot Walt Schauer.



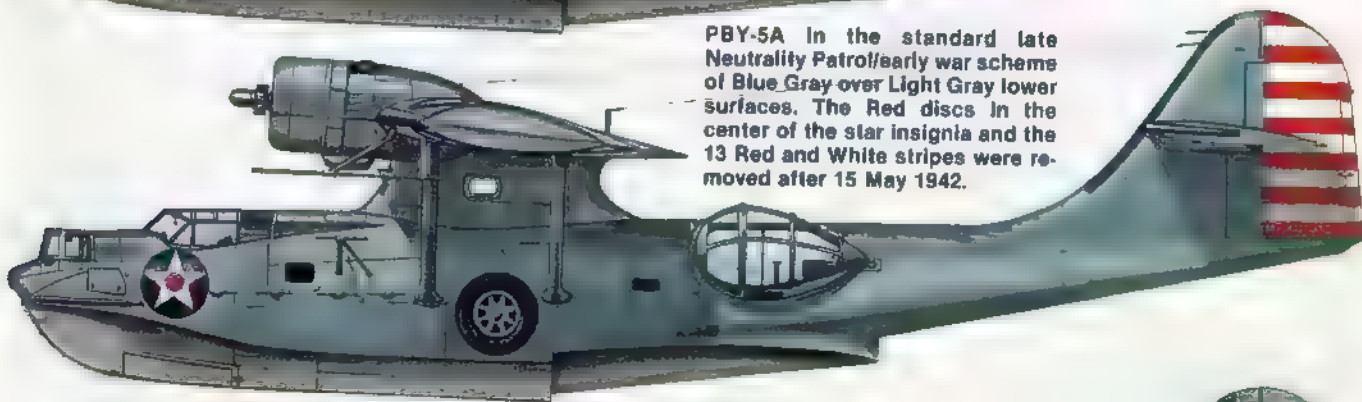
PBY-5A (BuNo 05045) assigned to ComAirSoPac, Espiritu, Santo, New Hebrides during 1942, this machine made the first landing on formerly enemy held territory when it landed on Guadalcanal on 12 August 1942.



PBY-2 (BuNo 0455) of VP-10, Pat-Wing 2 at Pearl Harbor during 1932. Overall Aluminum paint with Black hull bottom, float bottoms, tail diamonds, and upper half of cowl bands.



Catalina I (PBY-5) serialied W8406, WQ Z of RAF 209 Squadron. With Lt (jg) Leonard B "Tuck" Smith USN, as co-pilot this machine located and tracked the Bismarck on 26 May 1941.



PBY-5A in the standard late Neutrality Patrol/early war scheme of Blue Gray over Light Gray lower surfaces. The Red discs in the center of the star insignia and the 13 Red and White stripes were removed after 15 May 1942.



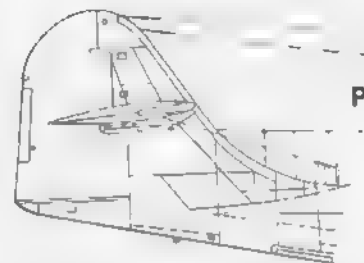


Early PBY-5 with Interim blister structure. Black work area on wing center section appears lighter color because of camera angle. Red center disc in insignia is also washed-out. (USN)

Jacksonville-based Training Command PBY-5 taking-off for a practice bombing mission. The DF loop on the wing between the engines is silhouetted against the sky. Note four bombs on under-wing racks. (Archives)

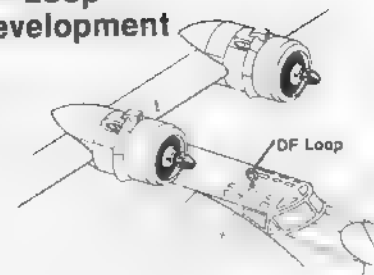


## Tail Development

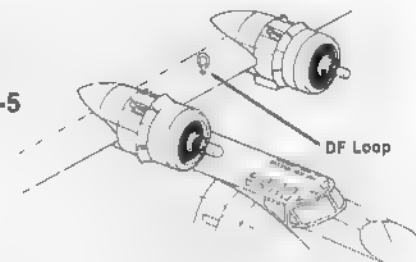


## DF Loop Development

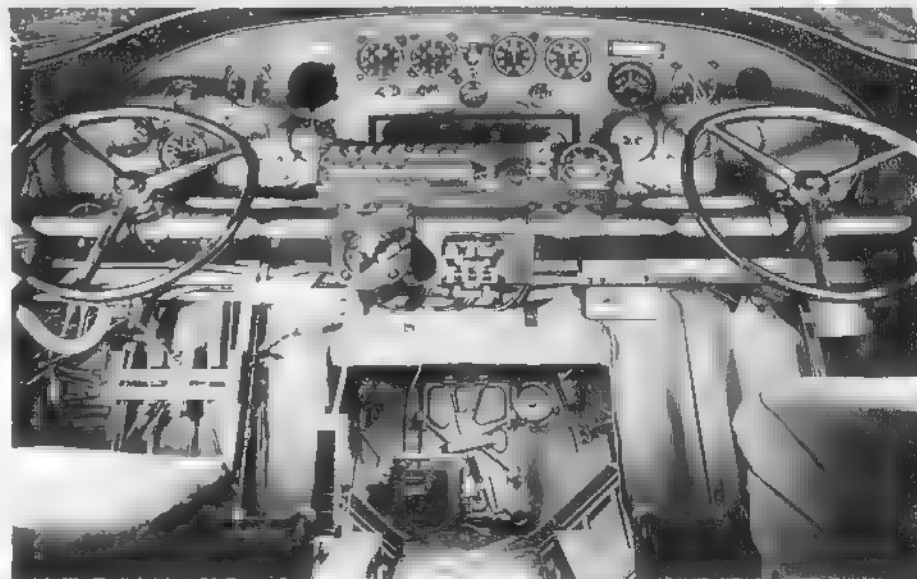
PBY-4



PBY-5



PBY-5 cockpit. Yoke extending across the cockpit provided aileron and elevator control. Toggle switches, center on top of yoke provided communications between cockpit and flight engineer. Bombardier's station is visible in the bow under the console. The Norden Mk XV bombsight is mounted on rack forward of the cushion. The watertight door is over the bombers window. Rudder pedals are at bottom, left and right of center. (Convair)





PBY-5 of VP-52 at NAS Norfolk is being towed to a hanger. One man steers at the tail wheel, while a man walks along on each side at the main gear ready to apply the brakes if neccessary. Mark 42 bomb racks for practice bombs are mounted under the wing. (Author)



Seattle-based VP-42 PBY-5s in late 1941. Planes are Blue Gray top, Light Gray under surfaces. (USN)



Patron 52's No. 1 at Norfolk in early 1942. Colors are early war standard Blue Gray, over Light Gray lower surfaces. (Archives)

# Catalina I & II

The 106 Export Model 28-5s ordered by Britain in 1939 were delivered beginning in November 1940. Designated Catalina I or II depending on the minor differences in the equipment installed, the RAF planes were ferried across the U.S. by civilian crews from American Export Airlines and out to Bermuda, where British crews picked them up for the final leg of the flight to England. These first RAF Catalinas were delivered to Coastal Command squadrons 209 and 240. A group of 16 experienced U.S. Navy PBY pilots assisted in transitioning RAF crews to the new boats. WQ Z of 209 squadron, with Navy Ensign L. T. Smith flying co-pilot, was the Cat which located the BISMARCK when the German battleship escaped into the North Atlantic in May 1941.

During 1940 and 1941 Consolidated received significant additional orders for its suddenly popular (and only available) maritime patrol aircraft. Australia ordered 18 Catalina Is, Canada ordered 36 boats under the designation Canso, the Dutch ordered 36 boats for their forces in the East Indies, and an order for 30 boats placed by France was taken over by Britain after France fell to the Germans. These export Catalinas were produced by Consolidated on the same assembly line as US ordered boats and were structurally identical to their US Navy counterparts, being rearranged internally and equipped (armament, radio, survival gear, etc.) to meet the purchasers' specifications.

**Early Catalina I in RAF camouflage scheme of Dark Slate Gray and Extra Dark Sea Gray with White under surfaces. (UTC)**



**Catalina I, serialled W8434, was the last plane of the first British contract, delivered in August 1942. (D. Menard)**

**Seven RAF Cats were operated by Qantas Airways in 1943-44 on probably the longest scheduled airline service ever offered — Ceylon to Perth, Australia, averaging 27 to 30 hours enroute. (BOAC)**

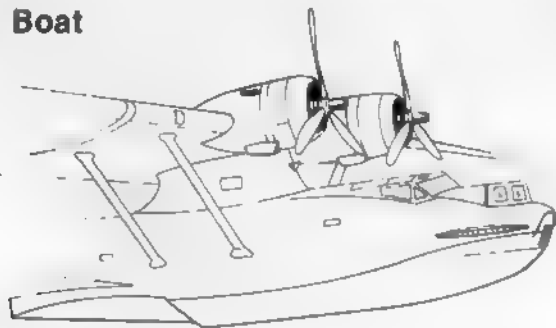


# PBY-5A Catalina Amphibian

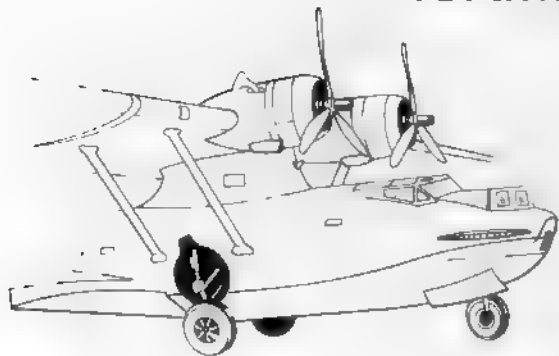
During the spring of 1939 the last production PBY-4, BuNo 1245, was converted to an amphibian featuring a retractable tricycle undercarriage. The nose wheel fully retracted into the lower front hull and the main gear retracted into recesses on the fuselage sides between the wing struts. Empty weight escalated by some 2300 lbs. Designated XPBY-5A, the prototype flew for the first time on 22 November 1939. Realizing the increased usefulness and versatility of the amphibian, the Navy's contract of 20 December 1939 was modified for the last thirty-three aircraft to be delivered as PBY-5A amphibians. Other countries followed suit, immediately modifying their contracts to include PBY 5A amphibians. On 25 November 1940 the Navy ordered an additional 134 PBY-5As, 30 more in June 1941 and another 22 in October 1941.

In 1940 the Boeing-Canada production facility at Vancouver was licensed to build the PBY. The first fifty-five machines were CANSO As assembled from parts made at Consolidated in the US.

## PBY-5 Flying Boat



## PBY-5A Amphibian



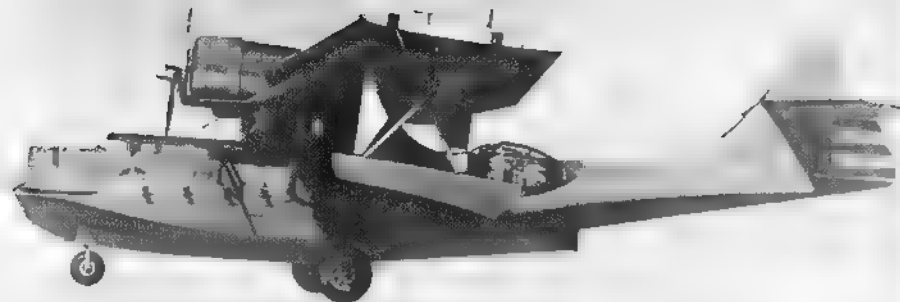
The last production PBY-4, BuNo 1245, was equipped with a tricycle landing gear and redesignated XPBY-5A, becoming the prototype for all the later amphibians. Except for the addition of the landing gear, the plane is a standard PBY-4. (Convair)

The starboard main landing gear.(USN)

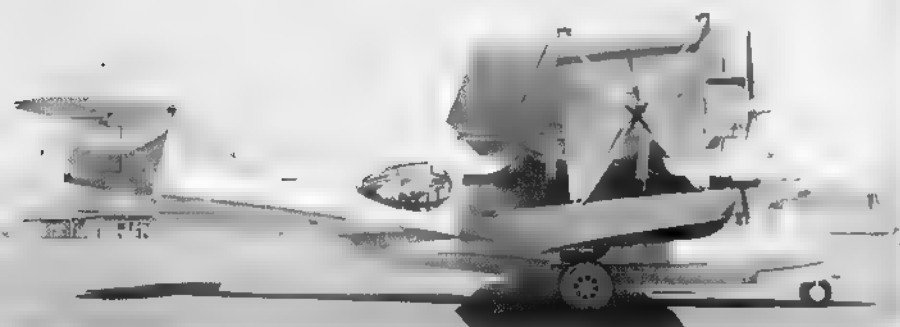


The port main landing gear.(USN)





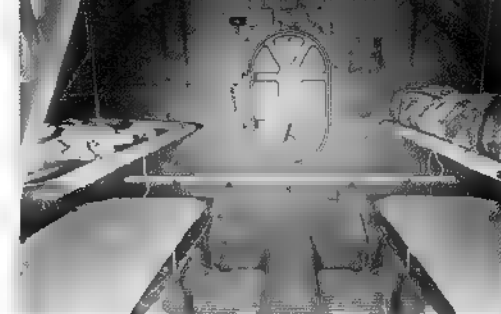
The nose wheel of the amphibian retracted into a water tight compartment in the bow. This early PBX-5A carries the early war scheme of Blue Gray over Light Gray. (USN)



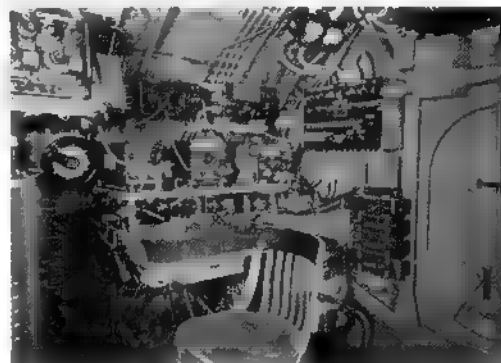
PBX-5A BuNo 46572 in tricolor camouflage. Tube under the wing inboard of the struts is the fuel dump line for the starboard fuel tank. Dump valves were installed in tanks without self-sealing liners. (Convair)



Bow compartment. (USN)



Bunk compartment looking aft. Door leads to waist gun station. (USN)

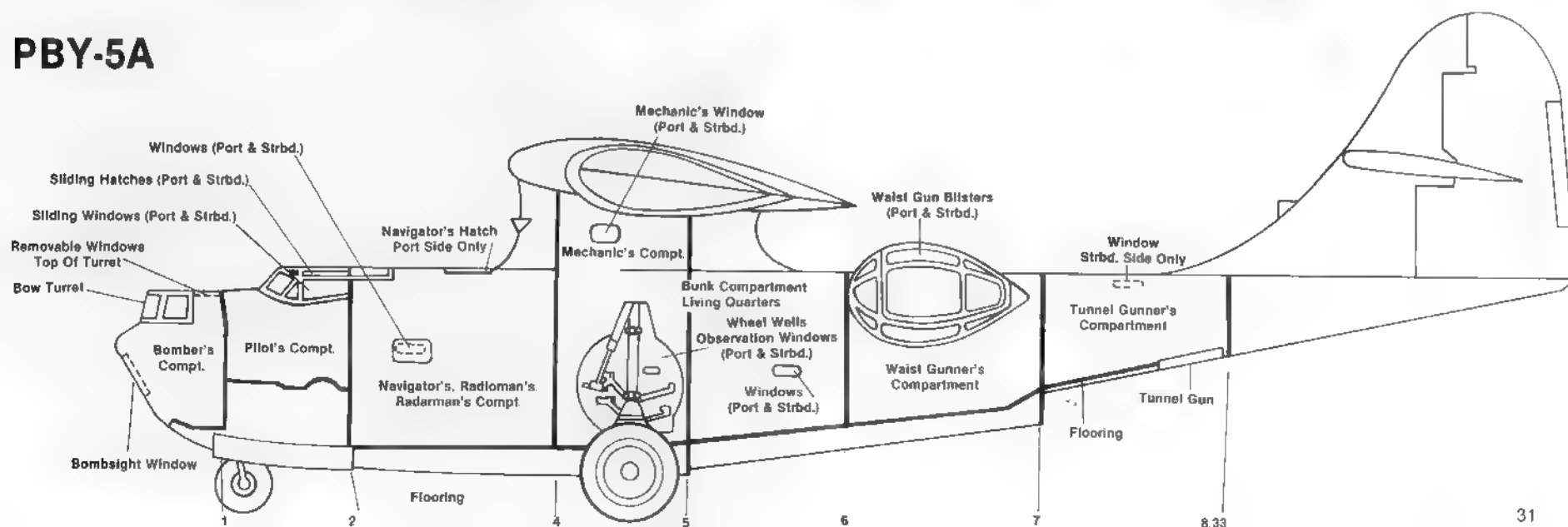


Radioman's station. (USN)



Tunnel gun compartment. (USN)

## PBX-5A





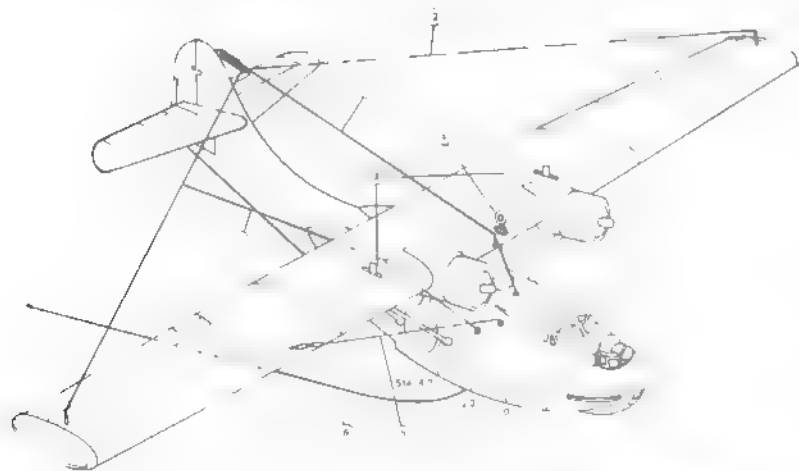


Open-sea landings required a full-stall, demonstrated by this USCG PBV-5A at instant of touchdown. (USCG)



The underwing Yagi radar was first carried in 1943. The engines are equipped with flame dampers. NAS New Orleans during 1944. (Bill Fornoff via Joe Weathers)

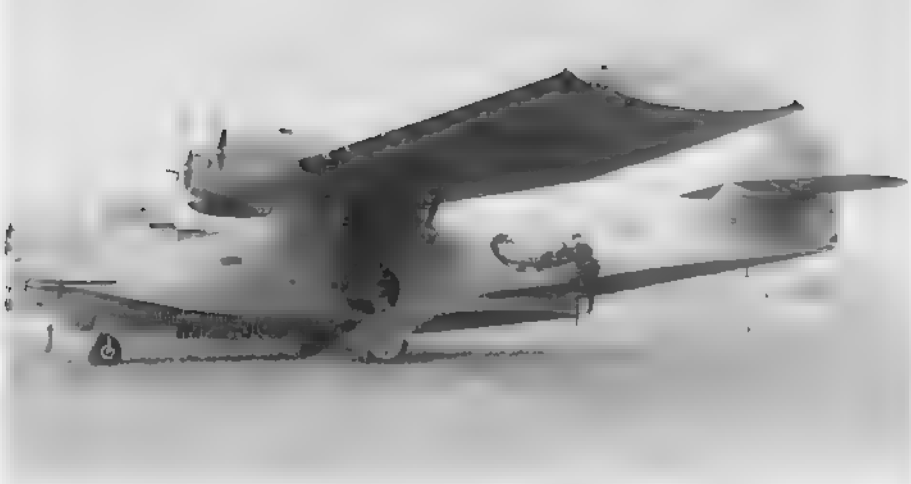
## Radio Antenna Details



- 1 CW High Frequency
- 2 CW High Frequency
- 3 Radio Altimeter (after 1943)
- 4 RDF
- 5 Voice Radio, MHF
- 6 Trailing Wire for HF CW
- 7 Lead-in

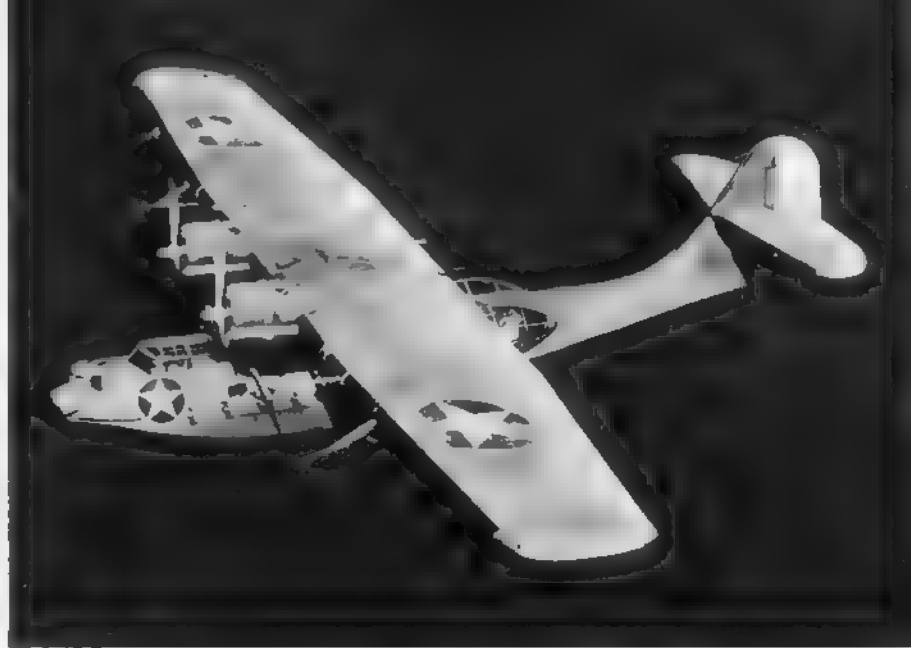
## IFF, Lorenz & ASV Antenna Installation





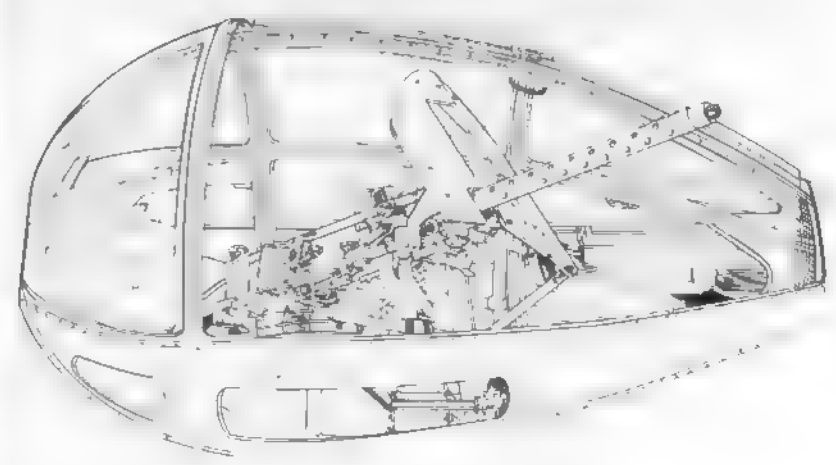
**The PBY-5A was delivered to the RAF under the designation Catalina III during early 1942. The eleven machines delivered were put into service on the North Atlantic Ferry route. (D Menard)**

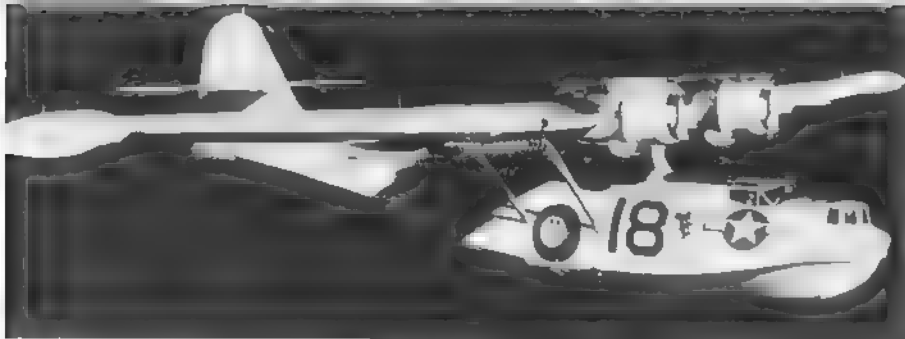
**The Yagi radar antenna arrays mounted on both wings are silhouetted against the sky. (USAF)**



**Radar began appearing on PBYs during 1941. This amphibian carries the early Blue Gray over Light Gray scheme. The Red tail stripes and disc in the stars were carried from January to May 1942. (USN)**

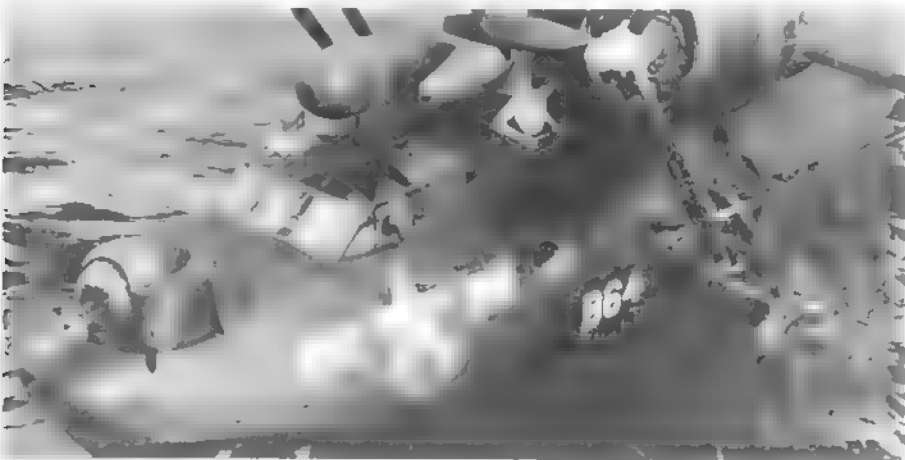
**Port Waist Gun Blister (Open)**



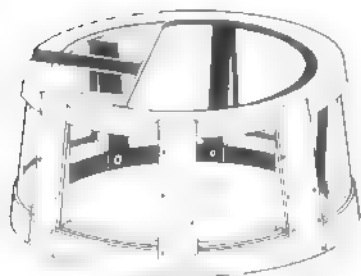


PBY-5A of VP-63 in the Atlantic camouflage scheme of Dark Gull Gray upper surfaces, Light Gull Gray sides, with White lower surfaces. Retro rockets are mounted under wing, and MAD gear is housed under rudder. (Merle Olmstead)

Late PBY-5As were equipped with the twin .30 caliber eyeball bow turret. B64, painted all Black, belongs to VP-54, a Black Cat squadron. (F.C. Dickey)

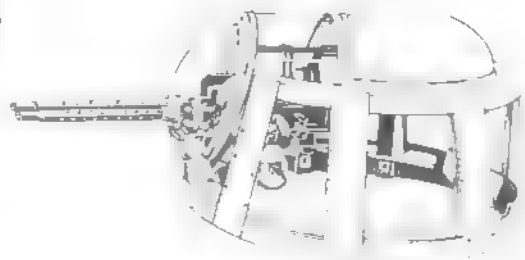


### Bow Turret Development



Standard Turret

### Eye Ball Turret



Standard PBY-5A four bottle JATO installation. The antenna lead-in wire can be seen behind the wing pylon. The fuel dump line is aft of the nacelle attached to the underside of the wing. (USN)

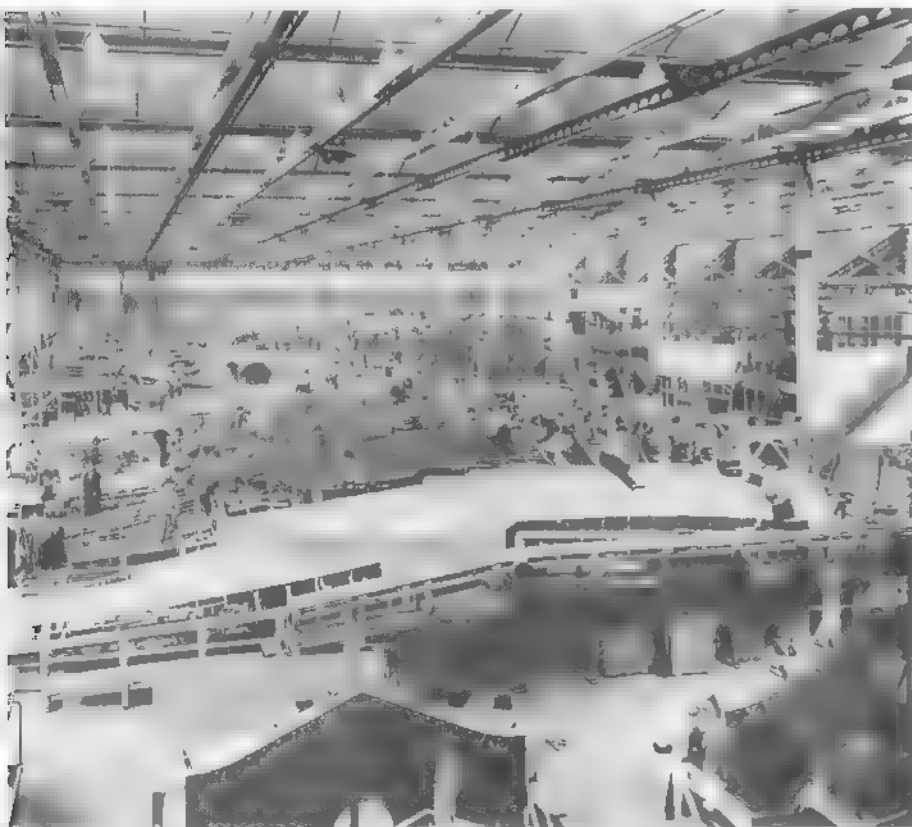
Air Force OA 10 (PBY-5A) of 10th Rescue Squadron demonstrates JATO takeoff. This USAAF JATO installation utilized only two bottles which were mounted aft of the fuselage blisters. (USAF)





CANSO A (serial 9751), Boeing of Canada's first licensed built PBV-5A, was named "Athlone" to honor the Governor General of Canada. (Canadian Archives)

CANSO A production at Canadian Vickers in 1944. "Bottoms up" initial assembly was also utilized by Consolidated at San Diego. The first fifty five aircraft were built from parts and sub-assemblies manufactured in the U.S. (Canadian Arc.)



RCAF CANSO A, (12088) was delivered by Canadian Vickers on 6 June 1944. The overall White finish was adopted by the RCAF late in WW II. (H. Levy)

Canadian Vickers built USAAF OA-10A (PBV-5A), serial number 44-34014, was part of a batch originally designated PBV-1A. (W.T. Larkins)



6th USAAF Ferrying Group at Long Beach, Calif prepares OA-10As for TransPac ferry in mid-1944. (USAF via E. Cassagneres)



# PBN Nomad

A determined Navy effort to improve the PBY resulted in a major re-design incorporating extensive hull, wing and tail changes to improve performance and handling both on the water and in the air. The scope of the changes, which had originally been proposed as production modifications to be incorporated by Consolidated, were so broad that it was soon realized that it would be impracticable to attempt on the existing production lines without a serious interruption of PBY deliveries to the Navy. As an alternative, a new production line was established at the Naval Air Factory in 1941 to produce the modified boat, under the designation PBN-1 Nomad. The bow was extended and clamshell doors for the bombing window incorporated. The hull afterbody was extended 56 inches and a shallow breaker step was added just forward of the tail. Redesigned wing tip floats improved take off. The wing was strengthened and additional fuel tankage was provided in the wing center section. A redesigned tail was incorporated and the electrical system was updated. Nose armament was upgraded to a .50 caliber machine gun in a retractable power driven turret.

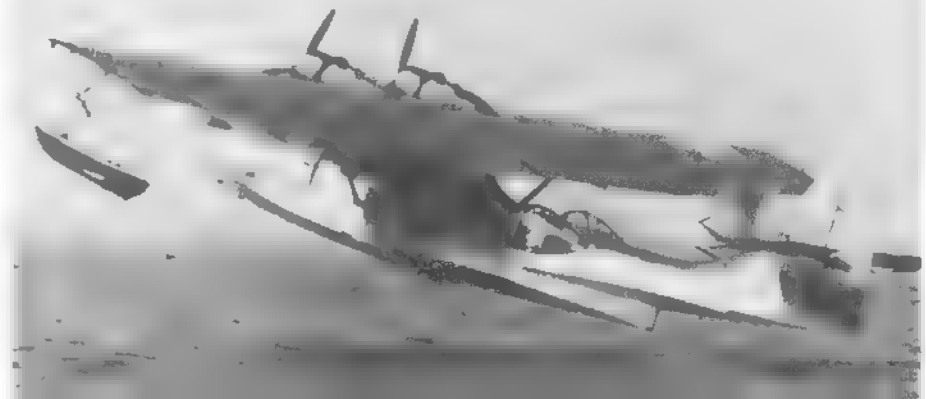
Development of the changes proceeded slowly and the first of the 156 aircraft ordered was not delivered until February 1943, with the last of the lot accepted in March 1945. Only 17 PBN Nomads were delivered to the US Navy; the remainder of the production batch had been ferried to Elizabeth City and delivered to Russian crews for delivery to the USSR.

The design changes made in the PBN-1 Nomad were to improve performance and handling characteristics on the water and in the air. (USN)



One of only 17 PBN flying boats operated by the U.S. Navy. Clipper bow, semi-retractable turret and revised wing tip floats are distinguishing features. (Archives)

Changes made in the hull and floats allowed a shorter take-off run. (USN)



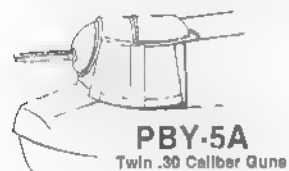




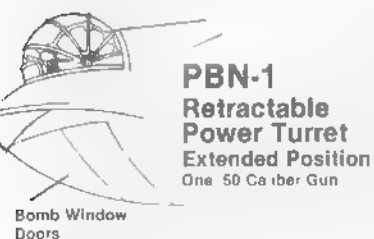
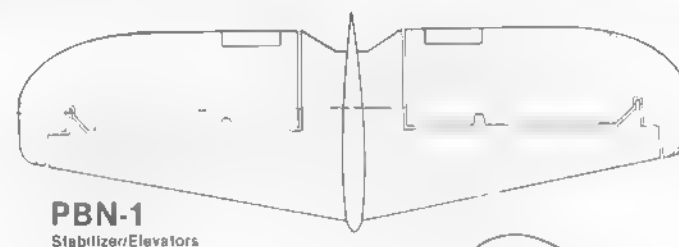
At NAS Kodiak, Alaska, on 3 September 1944, Commander of the local Russian ferry detachment briefs a crew for the next leg of a PBN delivery flight to the USSR. (Archives)



PBNs at a Russian seaplane base. No details of the USSR operations of either PBY or PBN have ever been released. (Smithsonian)



## PBN-1 Nomad

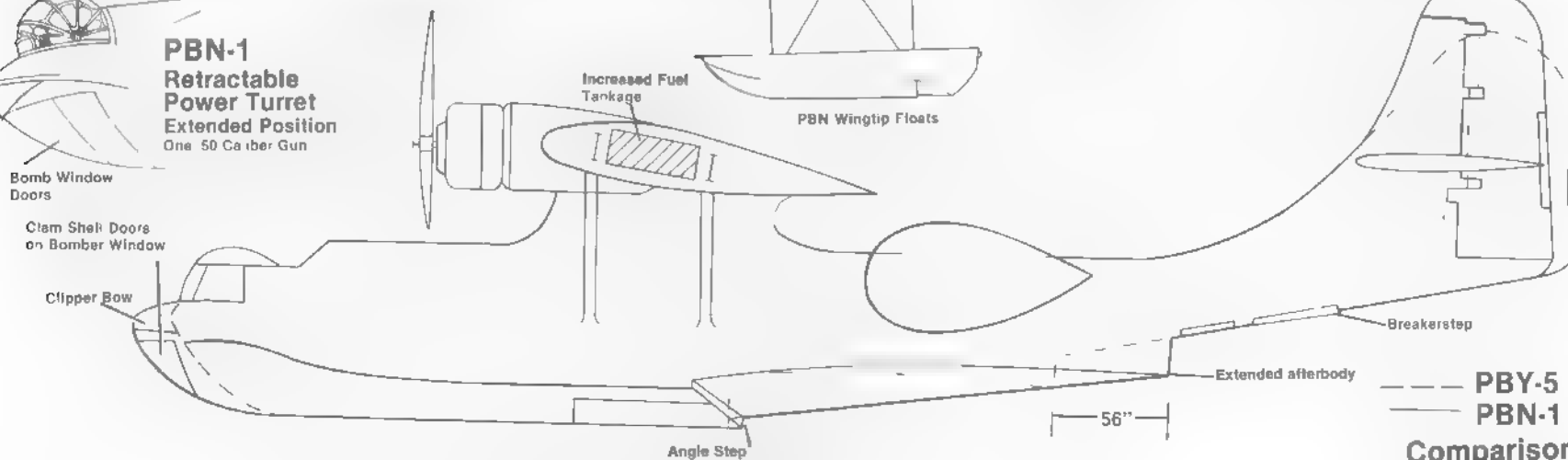
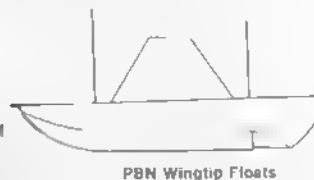


Bomb Window  
Doors

Clam Shell Doors  
on Bomb Window

Clipper Bow

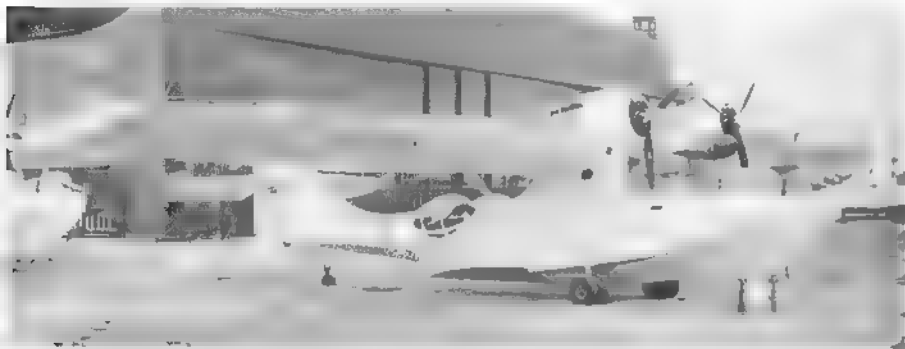
Increased Fuel  
Tankage



--- PBY-5  
— PBN-1  
**Comparison**

# Catalina VI (PB2B-2) Flying Boat

The tall tail of the PBN was incorporated into the PBY-5 boat and designated Catalina VI (PB2B-2). Equipped with most of the late production changes including the thermal wing, tail de-icing, eye ball bow turret, and radome, they were built at the Boeing Canadian plant. Most of these machines saw service with the Empire's services, RAF, RAAF, and RCAF, but a few were used by the US Navy under the designation PB2B-2.

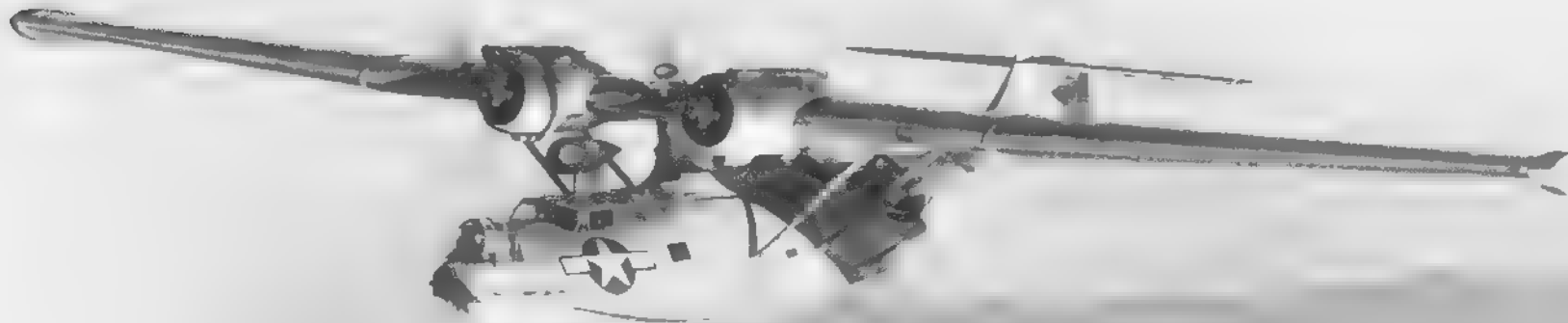


(Above) Boeing's Canadian built PB2B-2 was basically a PBY-5 with British equipment. Late -5 design changes were incorporated, including thermal wing and tail de-icing. (Peter M. Bowers)



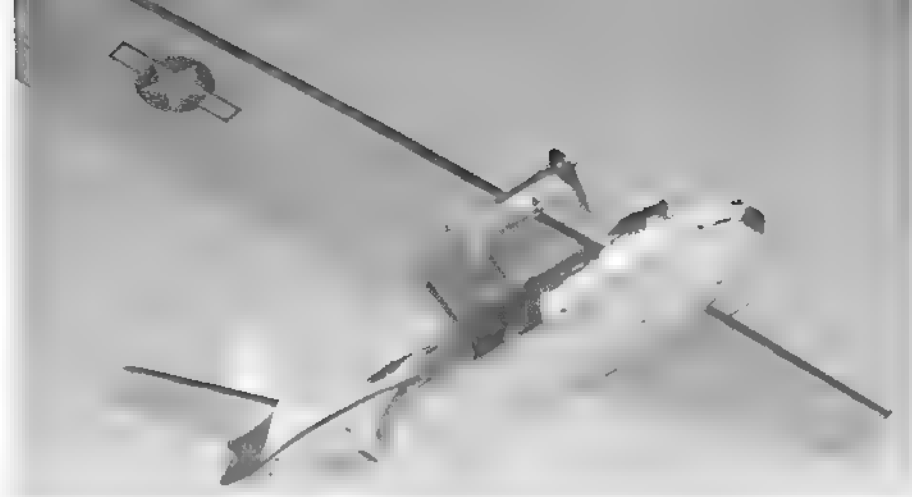
The Catalina VI was delivered to Australia for service with the RAAF. Scheme is Dark Sea Gray over White. (Boeing)

PBN tail, latest radar, eyeball bow turret and thermal deicing were all incorporated in the PB2B-2. Only a few of this model were operated by the U.S. Navy. (Boeing)



# PBY-6A Amphibian

The last production variant of the Catalina was the PBY-6A amphibian which incorporated the design improvements of the earlier models, especially those found on the Nomad, plus additional armor, armament and radar in order to concentrate on production of the PB4Y-2 Privateer; production of the Catalina was moved to the new Consolidated plant in New Orleans (available with the cancellation of the P4Y-1 Corregidor). Between January and September 1945, 175 PBY-6As were produced, with 30 going to Russia and 75 going to the USAAF as OA-10B rescue aircraft.



PBY-6A, BuNo 46542, carries out the job she was designed to do — coastal patrol. The PBY-6A, the last production version built for the US Navy, incorporated many of the design features of the PBN-1 Nomad. (USN)

PBY-6A was distinguished by the PBN-type tail and radome above the cockpit. Fuel dump line is installed on the starboard tank. (Convair)



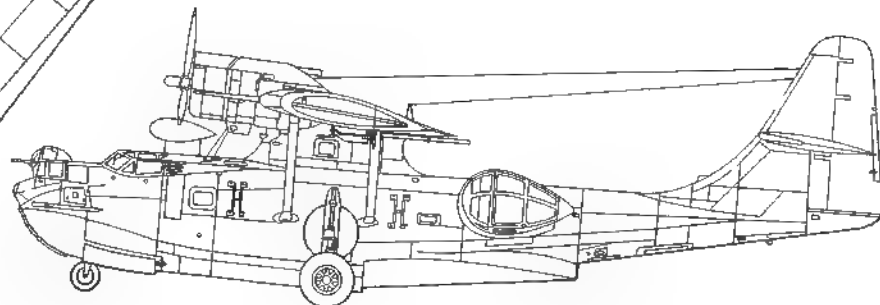
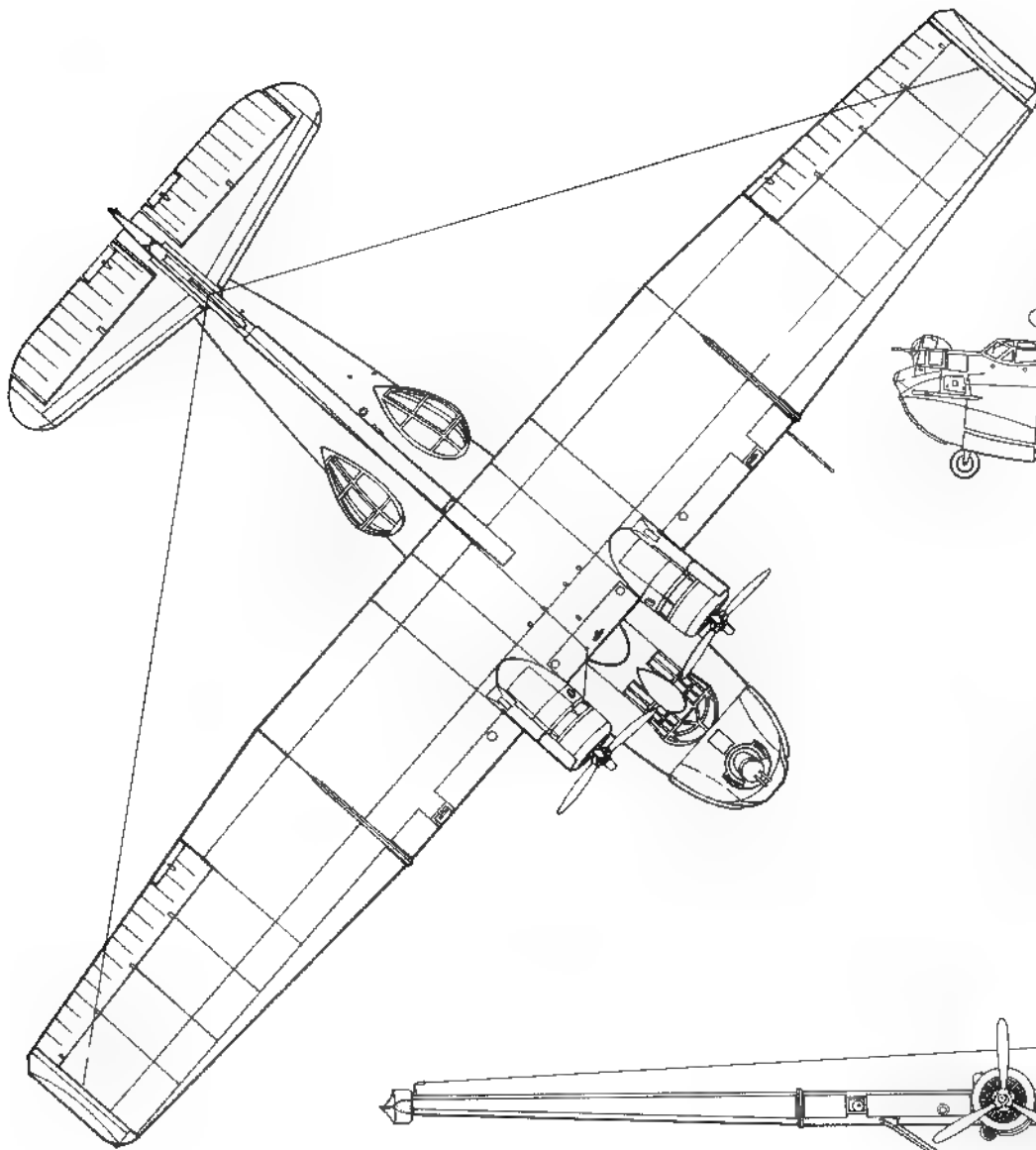


Parachute-dropped AR-8 life boat was evaluated on the PBY-6A at Patuxent River Test Station. (USN)

PBY-6As served into the post war period. This overall Dark Sea Blue amphibian of VU-7 based at NAS San Diego is seen off Coronado Island in 1949 (A.W Scarborough)



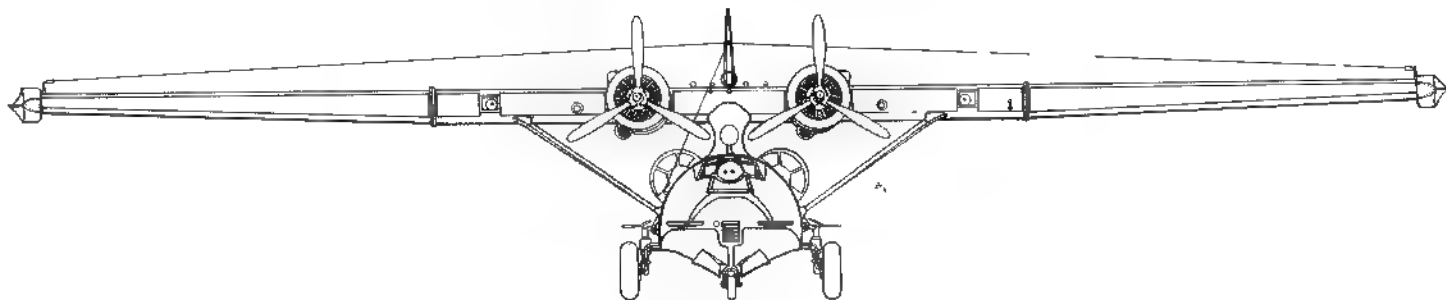
# PBY-6A Catalina



## Specifications

### PBY-6A Catalina

<b>Length:</b>	63 feet 6 inches
<b>Wing Span:</b>	104 feet
<b>Height:</b>	22 feet 6 inches
<b>Gross Weight:</b>	34,550 lbs.
<b>Maximum Speed:</b>	178 mph at 7000 feet
<b>Service Ceiling:</b>	16,200 feet
<b>Range:</b>	2,535 miles
<b>Power Plant:</b>	P & W R-1830-92
<b>Horse Power:</b>	1200 hp





# U.S. Navy PBY Operations

## Pre-World War II

U.S. Navy PBY patrol squadron operations during the waning years of peacetime consisted almost entirely of training exercises for flight and ground crews in those activities for which the VP squadrons were traditionally responsible, which included high and low altitude bombing, gunnery, torpedo drops, off-shore patrol. The flight crews regularly flew such training missions from the seaplane base to which the squadron was assigned. Several times each year an "advanced base" exercise was conducted, usually as a part of a fleet tactical exercise under simulated combat conditions. For such activities a seaplane tender would provide crew and aircraft support. The ship was responsible for selecting an operating area (or was assigned one) in a not-too-distant bay or estuary, putting out mooring buoys for the planes and marking the takeoff and landing lanes in the seadrome with lines of buoys. The ship provided boats for servicing the aircraft and for flight crew transportation between the ship and the planes and for policing the seadrome. The tender's shops and storerooms provided everything required for extended operations, including major maintenance.

The Neutrality Act in late 1939 and subsequent establishment of the off-shore Neutrality Patrol put the fleet patrol squadrons on virtually a combat footing and afforded the opportunity to gain soon-to-be-needed experience in all aspects of the patrol squadron mission.

## World War II

The Japanese attack on Pearl Harbor and the loss of personnel and aircraft in the Hawaiian area was a disaster to the patrol squadrons based there. Twenty-seven of PatWing 1's aircraft were destroyed and six were damaged, only the three PBYs on patrol during the attack were operational. At Ford Island, the entire VP 22 was put out of action when a bomb hit and destroyed their ramp. This was not the case in the Philippines area where tension had mounted steadily during the weeks prior to the attack on Pearl Harbor as Japanese and U.S. patrol planes avoided contact when they met in the off-shore search areas. PatWing 10's response to this hostility emphasized deployment to scattered outlying bases from which operations could continue if an attack came. Unfortunately, the overwhelming strength of the enemy attack and the complete loss of air control had not been anticipated and many of PatWing 10's PBYs were lost at their moorings during the first few days of combat. On 11 December, seven planes returning from patrol were destroyed by strafing fighters as they were mooring.

Early engagements between the PBY 4s and enemy aircraft dramatically emphasized the PBY's vulnerability. Lack of crew armor and self-sealing fuel tanks virtually assured the success of a determined attack by enemy aircraft. In the few recorded accounts of attacks against formations of PBYs, there is little evidence of any attempt by the P-boats to maintain group integrity and use mutually supporting firepower to ward off the enemy.



In conformance with the neutrality act, a large star with a Red disk was carried on the nose. Early ASV radar antenna can be seen on the forward hull. (Ray Wagner)

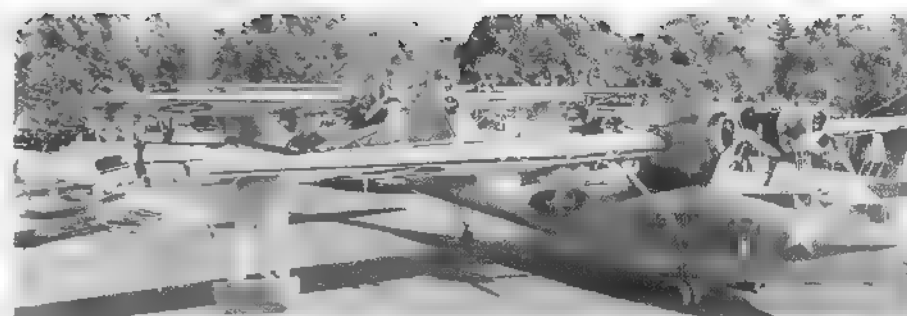
NAS Kaneohe and destroyed PBY-5s on 7 December 1941. (Archives via D. Lucabaugh)



Under-scoring the PBY's vulnerability was the inadequacy of its highly regarded waist gun positions. The location was ideal for protection against tail attacks and the Browning machine gun was a thoroughly dependable weapon. However, the waist gun position lacked armored protection for the gunners and continuous ammunition feed for the Brownings. The PBY-4's guns were equipped with 50-round cannisters, standard for all similar installations. At the Browning's rate of fire of 600 to 800 rounds per minute, a gunner could fire a cannister in one 10 second burst! He then was required to remove the empty can, get a full one from the rack and put it into the mount on the gun, then load and charge the gun to ready it for additional firing. This activity at the open waist station was clearly visible to the attacking enemy pilots, who quickly learned to take advantage of the out-of-action gun station. The effectiveness of fighter attacks could be minimized by turning in to the fighter's attacking run, but this defence required good communication between cockpit and gun stations since PBY pilots could not see aft.

An example of the vulnerability of the PBY during attacks on well defended targets was the strike launched by VP-101 on 27 December 1941. Six PBY-4s took off from Ambon, Netherlands East Indies, for a dawn attack on a Japanese force in the harbor of Jolo, in the Sulus. The P-boats each carried three 500 lb bombs and the attack was planned as a formation horizontal bombing run in two 3 plane sections. Enroute the sections became separated and on arrival in the target area the lead section circled in an attempt to regroup the formation. The second section, not having sighted the first, continued on course and, with the target in sight, started their bomb run which provoked an immediate response from the Japanese A/A. Meanwhile, after 10 minutes of circling and with full daylight approaching, the formation leader initiated his attack with the first section. As the three PBYs, at 12 000 ft turned toward the target where the now alerted ship and shore-based A/A commenced heavy and accurate fire, scoring hits on the the P-boats almost im-

PBY-5A, BuNo 05045, of the Flag Utility Unit was the first aircraft to land on formerly enemy held territory when Lt W S Sampson landed at Lunga Point Guadalcanal. (USN)



VP-101 Catalinas at Pelican Point, Australia, in August 1942 — the end of the line for the Squadron which had been fighting a desperate delaying action against the Japanese from the Philippines. The PBY-5s were ferried out to replace the PBY-4s lost in action during the fall back. (Archives via D. Lucabaugh).

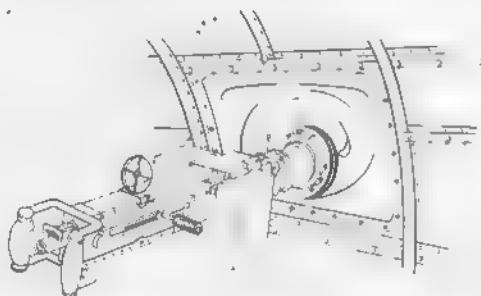
Bombing up for a mission after a snow storm at Cold Bay, Alaska, 23 November 1942. (George H Earle IV)





Seaplane tender hoists a Catalina aboard for major maintenance, periodic check, engine change or structural repair. This PBV has radar antenna array aft and fuselage tunnel blister mounts for additional aft .30 caliber gun. (USN via Naval Institute)

## Tunnel Gun Fuselage Blister



Aleutian based PBV refuels from a tender at an advanced base. Alternative was to moor at a buoy and wait for a refueler boat (bowser boat) to bring fuel. (USN)



mediately. Six fighters (probably Zeros) began making coordinated runs on the planes, scoring hits on every pass. Attempts to maneuver into the fighter's attack runs broke up the PBV formation, but the P-boats continued the bomb run independently. Two of the Zeros were hit and disappeared but the others continued the attack.

The lead PBV in the first section was shot down and the two wing planes, recognizing that the horizontal bomb run could not be completed, pushed over and made diving attack runs on the target ships. The P-boats dropped their bombs at about 10,000 ft, then continued the dive as the fighter attacks persisted. One PBV was set on fire at about 1,000 ft, and three of the crew baled out, the other four abandoned the burning plane after the pilot landed it. The wing plane, two of its gunners dead, another seriously wounded and its controls partially shot away, also landed successfully, bursting into flames as it touched down. Survivors of these crews made it back to the squadron after a two week odyssey of evasion and survival.

The second section of the ill-fated formation had arrived at the target early and immediately initiated their attack. One of the planes was shot down but the bomb run was completed, scoring hits on a Japanese cruiser and a large transport. The two surviving PBVs returned safely to the base at Ambon.

PatWing 10 had 43 PBV-4s assigned when hostilities began, but by the 13th of December only 11 planes were flyable and the decision was made to move south to a Dutch base at Manado, Celebes. From there the move continued to Surabaya where, on 23 December, the remaining crews and aircraft were merged as VP 101, with VP-102 being decommissioned. As the Japanese advance through the East Indies continued, the Wing retreated farther south, eventually reaching Australia in late February with only four surviving planes.

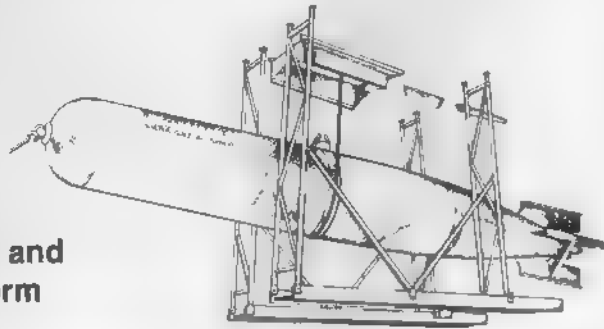
On arrival at Guadalcanal's Henderson Field in March 1943, VP-54 was greeted by a Japanese air attack. Crater from a near-miss is in foreground. Patron 54 Cats and Henderson Field tower are visible in the background. (W.C. Lemly via E. Leiser)



## Torpedo Attacks

There have been repeated references to "Jury rigged" PBVs making torpedo attacks. In fact, all models of the PBV were equipped to carry standard aircraft torpedos. An adapter, mounted on the underwing bomb racks, carried the torpedo and the installation provided all necessary services for a launch (arming the warhead, starting the motor, and electrical or manual release of the weapon). A Navy-developed Torpedo Director Sight could be mounted on a track inside the windshield above the instrument panel to provide the pilot with sighting information and a release point during the attack run.

Many PBV torpedo attacks were made during World War II, usually multi-plane night actions early in the war. And while some successes were claimed and losses to the PBVs were minimal, there were better torpedo planes available and few Catalina attacks were reported after 1943.



**Torpedo Hoist and Loading Platform**



VP-63, "Cowboys from Blitzville" flew the first U.S. Navy magnetic anomaly detection (MAD) equipped PBV-5 Catalinas in the Straits of Gibraltar. Retro-rockets fired vertically downward when the MAD operator detected a target. VP-63 is credited with sinking U-1055 and assisting in 3 other kills during 2 1/2 years operating from Pembroke Dock, Wales and Pt. Lyautey, Morocco. (USN)

## Black Cats

Of all the tactics developed and used by Catalina squadrons, the most effective and spectacular were the night search and attack operations conducted in the South and Southwest Pacific from mid-1942 until the end of the war. Black Cat tactics were developed after high PBV losses during the early months of the war had dramatically emphasized the Catalina's vulnerability to A/A and fighter attack. Two factors contributed heavily to the success of these night operations — the advent of effective radar and the Japanese reliance on night movement of supplies and personnel, primarily by barge and landing craft, to maintain their by-passed garrisons in the Pacific islands.

Night gunfire spotting and harassing raids had been flown by patrol squadrons operating in the Solomons area from late 1942 but the first squadron to be specifically equipped for night attack was VP-12. The squadron arrived on Guadalcanal with Black painted PBV-5As in December 1942 and operated from there until March 1943 when VP-54 took over the task. Later Black Cat squadrons based on Guadalcanal and other islands in the Solomons included VP-81, VP-11, VP-52, and VP-101.

As the war moved west the patrol squadrons also moved. Although usually tender-based, some of the boat squadrons were land-based as the occupied islands were developed and ramps and other required facilities were installed. Conversely, amphibian squadrons were sometimes tender-based and operated from seadromes when landing fields were not available. Better radar and improved tactics increased the effectiveness of the Cats against enemy surface shipping, seriously disrupting the flow of supplies and reinforcements to Japanese island bases. Black Cat operations reached their peak in late 1943.



Black Cats of Patrol Squadron 52 prowled nightly in the South Pacific waters off New Guinea, where the squadron was seaplane tender based in Namoi Bay. During the last 2 1/2 months of 1943, the VP-52 Cats hit and damaged two Japanese cruisers, two submarines and three destroyers. More than 10,000 tons of merchant shipping were sunk and another 24,000 tons damaged. The venerable PBV in her Black Cat guise had sharp claws! (Archives)



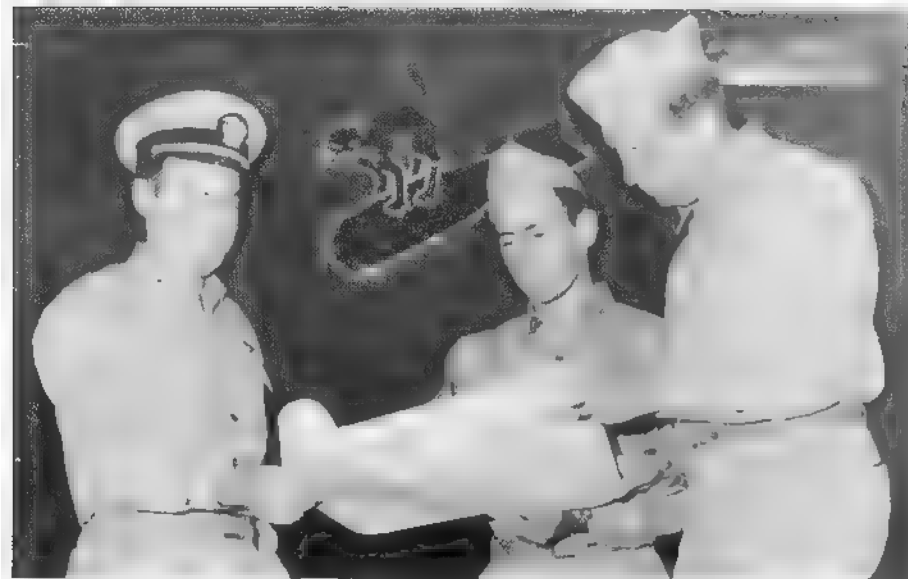


While based in New Guinea in late 1943, VP-11 assisted in the evacuation of Australian troops operating on the Sepik river, far behind enemy lines. More than 200 of the Aussies were brought out as the Catalinas made landings and takeoffs from the narrow, swift flowing river. On one of the last flights a plane's starter failed. Fortunately a spare had been carried and after beaching their plane, the crew proceeded to change the starter — a difficult task under ideal conditions. With Japanese troops in the area searching for the planes, the job was completed in record time and the PBV with its load of troops flew out safely. (McColgan)

VP-11 Black Cats probably displayed more "nose art" than any other Navy patrol squadron. Here, their No. 30 has been beached on the banks of the Sepik River during the squadron's support of Australian troops in late 1943. (Naval Aviation News)

Patron 11's Lts Hine and Higgs discuss the bomb and torpedo scoreboard on "Pistol Packin Mama" in New Guinea during 1943. (Ken MacWhinney)





The PBV-5As of VP-54 arrived in the Solomons equipped and painted for Black Cat operations and sporting their cat-on-a-bomb insignia. (H.G. McDonough)

## Dumbo

Catastrophe rescue missions undoubtedly are best remembered by the airmen picked up from life rafts at sea or from the beaches of remote deserted islands. These missions, code-named 'Dumbo' were so-called after the Walt Disney flying elephant character. The name was first used as a voice radio call sign. From the Solomons campaign on, Dumbo PBVs were regularly assigned to strike missions, usually orbiting on a stand-by station in the vicinity of the target area.

An example of the results achieved by the Dumbos is the record of a small detachment (usually only 3 PBVs) based at Tulagi in the Solomons, early in 1943. Between 1 January and 15 August this group rescued 161 airmen, representing all of the services operating in the area. Later operations in the Netherlands East Indies and the Philippines produced even more impressive results as more and better equipped aircraft and tactics became available. Additionally, better planning and control of air strikes assured more opportunities for rescue.

During the final months of the war, PBV squadrons in the combat areas of the Pacific alternated mission assignments between Dumbo search and rescue and night patrol and attack. This plan was devised to assure a more equitable distribution between squadrons of the high-risk attack missions and the relatively safe search and rescue tasks. PBV squadrons in the forward areas during the final months of hostilities included: VPB-29, VPB-33, VPB-34, VPB-44, VPB-52, and VPB-71.\*

Dumbo's efforts were appreciated — not only by those rescued, but also by all those who were prospective candidates for pick-up. The high regard in which the humble P-boat was held is reflected by the remark attributed to an Army pilot, "When I see a PBV, I always stand up and salute it!"

\*Note: On 1 October 1944 all of the VP and VB squadrons were redesignated VPB while retaining their originally assigned numeral.



VP-34 Black Cat number 69 flew a memorable Dumbo mission on 11 June 1944. Three survivors of a B-24, which had ditched returning from a strike on Truk, were picked up and returned to the Cat's base. (H.V. Pelton)

USAAF OA-10A making a rescue. Probably a drill, but being conducted as an actual Dumbo mission would be. (USAF)



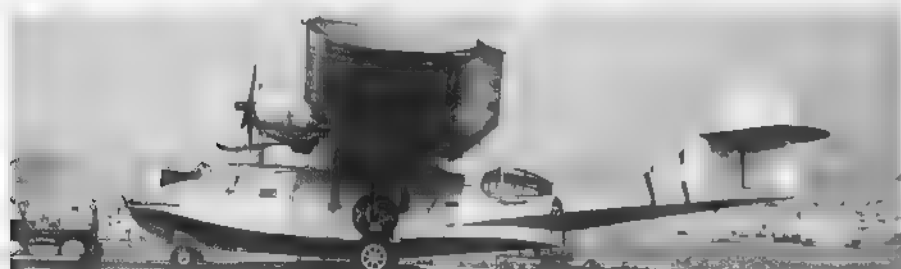


# Post-War Operations

## U.S. Navy

The Catalina had only a brief post-war service life in the U.S. Navy. Already considered obsolescent at the start of hostilities, it had been overtaken and superseded by a new generation of patrol planes which included the Martin PBM seaplane, and the PB4Y-2 and P2V landplanes. By 1948 there were only five PBVs left in the fleet and a few more in the Reserve squadrons. On 3 January 1957 the last operational Catalina, a PBV-6A of the Atlanta, Georgia Reserve was ordered stricken. With that action this remarkable airplane, truly the workhorse of WW II Naval Aviation, passed into history.

Utility Squadron 7 (VU-7) operated a mixed bag of aircraft including PBV-6As at NAS San Diego in the late 1940s (USN via R. L. Lawson)



US Coast Guard PBV-5AG (48322) at San Diego on 28 Oct 1948 in post-war colors and markings. Aluminum over-all, International Orange rear hull band and wing tips. (W. T. Larkins)

OA-10A 43-3924 flew from the San Francisco Bay area in 1948-49. (USN via A. W. Scarborough)



# Foreign Services

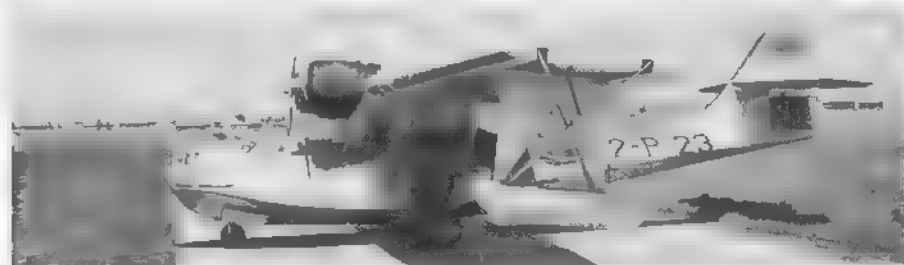
Catalinas continued in service in many air forces, primarily in the search and rescue role, through the 1950s. Central and South American countries operated the Catalina well into the 1970s. Brazil and Mexico, in particular, having numbers of the Cats in service, most of them late production PBV-5As and PBV-6As, and Canso As. Denmark operated a squadron of eight Catalina amphibians, primarily in Greenland, until the aircraft were withdrawn from service early in 1971.

PBV-5A of 1st Transport Squadron, Brazilian Air Force, based at Belem for Amazon River patrol. Light Gray hull, White top, Gray wings with International Orange tips. Tail stripes, from forward, White, Green, Yellow. Insignia inspired by the PBV is a flying turtle with motto, "I go slow, but I get there!". (Joe Weathers)



Danish Catalinas flew primarily from Greenland, through the 1960s. Light Gray hull, tail and wing lower surfaces. Top of wing is medium Red. Hull roundel is Red and White, as is the Danish flag tail insignia. (H. Levy)

Ex-Canadian Canso A sold to Argentina. Aluminum over-all with Black nacelles. Tail markings are Blue, White, Blue with sun emblem centered on White stripe. (W. T. Larkins)



## Civil Service

In the immediate post-war years, large numbers of Catalinas became available on the war surplus market and were acquired by operators of charter and air cargo services who recognized the capabilities of the plane. Stripped of armor and armament, radio and radar, the Cats could haul a respectable payload. More importantly, the old P-boat could get into and back out of marginal landing strips or any reasonable size body of water. Catalinas were operated by regional airlines in scheduled passenger service in the Caribbean and Alaska but their major contribution was the movement of airfreight into remote and otherwise inaccessible sites.

In the U.S. and Canada many Catalinas were modified for use as water bombers for fighting forest fires and were very successful in this unique role. Changes incorporated included sealing hull compartments to provide tankage for up to 1100 gals of water, picked-up at 70-75 knots with the P-boat running on the water surface. A retractable probe installed in the bottom of the hull just aft of the step can pick up 800 gallons of water in 15-20 seconds.

Another successful civil role for the Catalina is that of geophysical survey. Magnetometers and other detection equipment installed in the spacious hull are utilized in searching for mineral deposits or in the analysis of underground terrain features. The P-boat's range and modest cruise speed suit it well for this task.



**Super Cat, former PBY-5A (ex-BuNo 48287), used for mineral surveys with magnetic detection equipment in New Guinea. At Sidney in 1964 with Australian registration VH-UMS. Note the kangaroos painted on the cowlings. (G.R. Banfield)**



**PBY-5A, ex-BuNo 46633, registered in Canada is a "Super Cat" with Wright R-2600 engines and a revised vertical tail. The air yacht carries tenders under both sides of the wings. (J. McNulty)**

The addition of two Lycoming engines with reversible props gives the Bird PBY conversion a 4,000 mile range at 200 mph with excellent water-handling capabilities. Accommodations for up to 16 passengers including a complete galley, air conditioning, and a hot and cold shower! (W. T. Larkins)



**Extensive modifications have been made on fire bomber 54E, a PBY-8A (BuNo 84041), including deletion of the tip floats. (W.T. Larkins)**

54E demonstrates a water drop. The 800 gal load drops in .8 seconds covering an area 90 by 190 ft. (W.T. Larkins)



# **PBY/Catalina/CANSO Production Summary Flying Boats**

MODEL	TOTAL	DELIVERIES	SERIALS/REMARKS
XP3Y-1	1	MAR 1935	BuNo 9459. Redesig XPBY-1 May 36.CAC/B.
PBY-1	60	SEP 36/JUN 37	0102/0161. This & next 10 lots CAC/SD.
PBY-2	50	MAY 37/JAN 38	0454/0503
PBY-3	66	NOV 37/AUG 38	0842/0907
PBY-4	32	MAY 38/JUN 39	1213/1244
Comcl	7	JUN 37/JUL 39	GUBA I/II, TRANSATLANTIC, 3 CARGO MAIL BOATS, P-9630
PBY-5	167	SEP 40/SEP 41	2289/2455
PBY-5	90	APR 42/MAY 42	04425/04514
PBY-5B	225	MAY 42/NOV 42	RAF CAT IB, FP-100/324. 60 to USN with RAF SN.
PBY-5	426	NOV 42/JUL 43	08124/08549. 26 RAF CAT IVA, JX-571 to JX-585, JV-925/935. 22 to NZ as NZ-4001/4022.
PBY-5	70	JAN 43/JUL 43	RAF CAT IVA, JX-200/269.
28-5ME	160	NOV 40/AUG 42	Direct contr/Defence Aid CAT I, IA, II,IIA to RAF, RAAF, NEI.*
PBN-1	156	FEB 43/MAR 45	02791/02946. 137 to USSR, balance USN. Built at NAF.
PB2B-1	240	JUL 43/OCT 44	194 CAT IVB to RAF, SN unclear. 34 to NZ, NZ-4023/4056. 7 to RAAF, as A24-206/01/04/05/03/02/00. 5 to USN 44205, 44220/223. BOE/CAN
PB2B-2	67	SEP 44/MAR 45	RAF CAT VI SN JX-618/662, JZ-828/841, JX-645/46/48/52. 47 to RAAF, A24-300/309,350/386. RAF, USN, & Boeing records do not agree on SN. BOE/CAN.
PBY-5	1	MAR 44	63992. First acft for CAC New Orleans.
28-5MC	36	AUG 41/NOV 41	CANSO RCAF 9701/9736. RAF CAT IIA. CAC/SD
	1,854	Total Boats	
	1,418	Amphibians	
	3,272	Total PBY/CATALINA/CANSO Production	

# **PBY/Catalina/CANSO Production Summary Amphibians**

MODEL	TOTAL	DELIVERIES	SERIALS/REMARKS
XPBY-5A	1	DEC 1939	BuNo 1245. Final PBY-4. CAC/SD
PBY-5A	33	OCT 41/DEC 41	2456/2488. 3 to USAAF - OA-10-CO. CAC/SD
PBY-5A	134	DEC 41/MAR 42	7243/7302, 04792/05045. 2 to USAAF, 11 to RAF as CAT IIIA FP-525/533, 535/536. CAC/SD
PBY-5A	52	MAR 42/??	02948/977, 04399/420. 2 to USAAF. CAC/SD
PBY-5A	94	AUG 42/SEP 42	08030/123. 12 to USAAF. CAC/SD
PBY-5A	100	JUL 42/OCT 43	33960/34059. 31 to USAAF. CAC/SD
PBY-5A	130	OCT 43/DEC 43	48450/46579. 12 to USAAF. CAC/SD
PBY-5A	200	DEC 43/MAR 44	48252/48451. 12 to RAAF, 15 Free French CAC/SD
PBY-5A	59	APR 44/JAN 45	46580/638. CAC/NO
PBY-6A	61	JAN 45/MAY 45	48639/698,46724. 14to USSR.CAC/NO
PBY-6A	114	MAY 45/SEP 45	63993/64099, 64101/107. 75 to USAAF as OA-10B-CN. 30 to USSR. CAC/NO
OA-10A	230	DEC 43/MAY 45	All to USAAF, OA-10A-VI, 44-33868/34097. Orignally designated PBV-1A with USN SN 67832/68061. CAN/VIC
CANSO A	55	JUL 42/JUL 43	RCAF 9751/9805. Assembled from CAC/SD parts by BOE/CAN.
CANSO A	39	APR 43/OCT 43	RCAF 9806/9844. CAN/VIC
CANSO A	90	OCT 43/JUL 44	RCAF 11001/11090. CAN/VIC
28-5 AMC	14	NOV 41/DEC 41	RCAF 9737/9750. RAF CAT 1A. CAC/SD
28-5 NME	12	SEP 1942	NEI Y-74/85. CAC/SD

**1418 Total Amphibians**

Production facilities:  
Consolidated Aircraft Corp. (CAC). Plants at San Diego, Calif. (SD),  
New Orleans, La. (NO), Buffalo, N.Y. (B).  
U.S. Naval Aircraft Factory, Philadelphia, Penna. (NAF).  
Boeing of Canada, Vancouver (BOE/CAN).  
Canadian Vickers, Ltd., Montreal (CAN/VIC).

\*Serials for first lot of Model 28-5ME RAF Catalinas:

30 Catalina I - W8405/8434  
7 Catalina II - AM264/269  
40 Catalina I - AH530/569  
20 Catalina I - Z2134/2153  
9 Catalina I - AJ154/162



PBV-5 (BuNo 2293) of Patrol 52 at NAS Quonset Point, Rhode Island in 1941. Scheme is standard pre-war colors with oversized neutrality star on nose. Cowl rings should be True Blue, but aircraft does not carry them.



PBY-6A (BuNo 46542) in the tri-color scheme of Dark Sea Blue and Medium Blue over White under surfaces.



ISBN 0-89747-149-0